ROLE OF GRAM PANCHAYATS IN RURAL WATER SUPPLY AND SANITATION: A CASE STUDY OF DHARWAD DISTRICT, KARNATAKA

Thesis Submitted to the Kannada University,
through the Department of Development Studies, Hampi

For the Degree of
Doctor of Philosophy in Economics

NARAYANA BILLAVA
M.A., M.Phil (ECONOMICS)

Under the Supervision of
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CENTRE FOR MULTI-DISCIPLINARY
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DHARWAD-580 004

March- 2011

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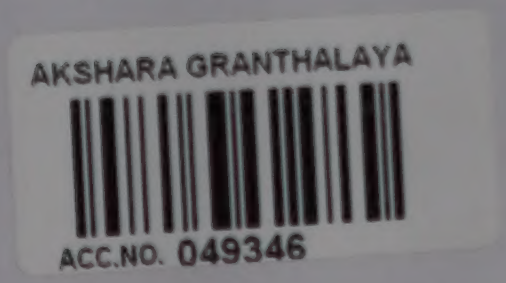

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DECLARATION

I declare that the thesis titled "**Role of Gram Panchayats in Rural Water Supply and Sanitation: A Case Study of Dharwad District, Karnataka**", is the result of my own work carried out at the Centre for Multi-Disciplinary Development Research (CMDR), Dharwad, Karnataka, and that it has not either wholly or in part been submitted for any other degree or diploma. Due acknowledgment has been made whenever anything has been borrowed from other sources.

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CERTIFICATE

This is to certify that the thesis titled "**Role of Gram Panchayats in Rural Water Supply and Sanitation: A Case Study of Dharwad District, Karnataka**", is a bonafide research work carried out by Mr. Narayana Billava independently under my guidance and supervision. I also certify that this has not been previously submitted for the award of any degree, diploma, associateship or other similar title.

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Narayana Billava

Dedicated to
Sri. Shiradi Saibaba

&
My Parents and Teachers

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LIST OF ABBREVIATION

Abbreviations	Expansion
GP	Gram Panchayat
ZP	Zilla Panchayat
TP	Taluk Panchayat
RWSS	Rural Water Supply and Sanitation
VWSC	Village Water Supply Committee
ARWSP	Accelerated Rural Water and Sanitation Programme
LPCD	Liters Per Capita per Day
MNP	Minimum Needs Programme
O & M	Operation and Maintenance
RGNDWM	Rajiv Gandhi National Drinking Water Mission
RWS	Rural Water Supply
GOI	Government of India
GOK	Government of Karnataka
MNP	Minimum Needs Programme
WHO	World Health Organization
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
NGOs	Non Governmental Organizations
DANIDA	Danish International Development Agency
UPA	United Progressive Alliance
PHED	Public Health Engineering Department
CCDI	Comprehensive Composite Development Index
CEENR	Centre for Ecological Economics and Natural Resources
RDPRD	Rural Development and Panchayat Raj Department
PWS	Piped Water Supply
MWS	Mini Water Supply
CVM	Contingent Valuation Method
LPCD	Liter per day per person Consumption of Water

CHAPTER-1

INTRODUCTION

1.1 Introduction

Images of big dams, bridges, roads, power plants, airports, etc.., evoke the word 'infrastructure'. But a few think of the toilet bowl or the water tap in the house as infrastructure, which remain the most commonly needed items of basic infrastructure. Recent studies have shown that investing in infrastructure will improve the health of the people, which in turn will increase productivity (Mavalankar and Shankar 2004). The demand for water supply and sanitation services is growing fast owing to the interactive effects of demographic growth, economic development and improvement in living standards.

Since the beginning of the sixth five-year plan (1980-85), and the launch of the international drinking water supply and sanitation decade, India has substantially increased its commitment to the water supply and sanitation sector. The provision of safe drinking water supply and sanitation facilities is a basic necessity of life and a crucial input in achieving the goal of *Health for All*. The Ninth Five Year Plan envisaged provision of potable drinking water to every settlement in the country on a sustainable basis and pursued all possible measures for the rapid expansion and improvement of sanitation facilities in rural and urban areas. Provision of safe drinking water and sanitation is a State subject and is the primary responsibility of the States. Government alone cannot take up the responsibility of heavy costs of rural water supply and sanitation programmes, and their operation and maintenance. People's involvement enhances not only the economic viability of operation and maintenance, but also helps in better upkeep and increases the life span of the system created. The government of India has considered these issues, under the 73rd and 74th amendments to the Constitution and, has assigned rural water supply and sanitation as one of the prime duties of Gram Panchayats.

This chapter presents an outline of the study with a brief introduction of rural water supply and sanitation situations in India, and Karnataka, research issues, objectives, methodology and limitation of the study.

1.2: Rural Water Supply and Sanitation Situations in India

1.2. A. Rural Water Supply:

Water is a basic need of life. Safe drinking water could make tremendous impact on the quality of life in our villages, because availability of safe drinking water has direct impact on the working conditions and health of the people and their productive capacity. It has been noticed that the problem of supply of potable water to a very large population is very complex and challenging. And also with industrialisation and urbanisation, the demand for water has increased.

Today, water supply systems comprise a wide variety of components, viz. dams, water channels, storage reservoirs, treatment plants, underground and overhead tanks and the city distribution networks. But in rural areas, drinking water is being supplied from various water sources like open wells, bore wells, tanks/pools, rivers, etc. But, many of these water sources such as open wells and tanks are getting exhausted and the dependency on ground water is increasing.

The 2002 National Water Policy of the Government of India (GOI) states that "provision for drinking water should be a primary consideration" in water resource development projects and that "drinking water needs of human beings and animals should be the first charge on any available water" (GOI, 2002). The World Health Organization (WHO) defines access to water supply services as the availability of at least 20 liters per person per day from an "improved" source within one kilometer of the user's dwelling. These improved sources include safe water sources such as household connections, public standpipes, protected dug wells, rainwater collection, bore wells and protected springs.

As per census of India 2001 the coverage of households having access to safe drinking water was around 73 per cent of rural households in India. Despite the continuing emphasis on drinking water supply in national plans, about 25 per cent of the households in rural areas do not have access to an adequate and safe supply of drinking water in India (Saleth and Sastry, 2004). According to their study about 49 per cent rural households were served by tube well/ hand pumps, around 22 per cent by wells and 24 per cent by taps.

The increasing pressure on rural water resources due to growing population, over exploitation for domestic, agriculture, industry and construction activities has led to water scarcity and decline in per capita availability of water. Further, the quality of water is also deteriorating and at many places has posed health problems due to excess fluoride, iron, and other contaminants. Despite various immunisation, nutrition and other health programmes, nearly 10 million people every year suffer from cholera, diahorrea, gastroenteritis, malaria and guinea worm, the causes for which could be directly attributed to unsafe water supply, human and other waste disposal (Bijlani and Rao 2004:9). Safe and adequate drinking water is an essential input for life. Relevantly, Bharat Nirman Programme of UPA Government targeted 100 per cent coverage under safe water supply by 2009 but there are many problem areas in this field viz., low budgetary allocation, under-spending; corruption and mismanagement. The efforts for the provision of safe drinking water made by government and other organizations have not been enough to cover all rural habitation in India.

1.2. B. Sanitation:

The term sanitation is not limited to latrines alone. It includes personal hygiene, community well being, garbage management, low cost housing, waste water flowing, drainage system and environmental health in general. The term "*sanitation*" can be applied to a specific aspect, concept, location, or strategy, such as:

- Basic sanitation - refers to the management of human waste at the household level. This terminology is the indicator used to describe the target of the Millennium Development Goal on sanitation.
- On-site sanitation - the collection and treatment of waste is done where it is deposited. Examples are the use of pit latrines, septic tanks, and inhole tanks.
- Food sanitation - refers to the hygienic measures for ensuring food safety.
- Environmental sanitation - the control of environmental factors that form links in disease transmission. Subsets of this category are solid waste management, water and wastewater treatment, industrial waste treatment and noise and pollution control.
- Ecological sanitation - a concept and an approach of recycling to nature the nutrients from human and animal wastes.

Sanitation is the hygienic means of preventing human contact with the hazards of wastes to promote health. Hazards can be physical, microbiological, biological or chemical agents of disease. Wastes that can cause health problems are human and animal feces, solid wastes, domestic wastewater or hygienic (sewage, sullage, grey water), industrial wastes, and agricultural wastes, disused like cars, computers, household appliances, electronic appliances (bulbs, regulators). Latrine is a crucial component of sanitation as such we legitimately use the terms synonymously and tend to identify one with the other. Arrangements for flow of toilet water and rainwater, proper disposal of human waste and other solid waste surrounding the house and preventing indoor air pollution in congested and non-ventilated houses are some of the important issues of rural sanitation. The close connection between rural latrines and rural sanitation underscores the need to pursue the low cost latrine programme in rural areas with dedication, if we are serious about improving sanitation.

In India, according to 1991 census, only 6.9 per cent of the households in rural areas had individual latrines (GOI 1999). The sanitation situation is worse as 75 per cent of rural populations do not have access to sanitary and basic hygiene (Saleth and Sastry, 2004). However, the percentage of households having access to sanitary and basic hygiene has slowly increased in India in the last 15 years.

The government of India has introduced some programmes and schemes under the Ministry of Rural Development, Rural Sanitation Programme (1986), Total Sanitation Campaign (1999), etc., to improve the quality of life of the rural poor and to provide privacy and dignity to the women. Ninth Plan also had given high subsidy for greater household involvement, intensive information, education and communication (IEC) campaigns, and has emphasised on school sanitation.

The provision of safe and adequate drinking water supply and sanitation facility is a prerequisite for human resource development and also to maintain clean environment and also fundamental in building blocks in the development process, influencing economic development, employment, agriculture, housing, health and numerous other sectors. These benefits are spread broadly across societal concerns. Often, the role of drinking water is neglected in the health indices. Reflecting on this, Dr. Halfdan Mahler (1984), former director general of the world health organization (WHO) said, "The number of water taps per 1000 persons is a better indicator of health than the number of hospital beds".

Health benefits result from improved quality and increased quantity of water, adequate sanitation facilities, and changes in hygiene behavior. For a number of waterborne diseases transmission occurs as a direct result of draining of contaminated water. In other cases transmission cycle is through stagnant water, which provides a breeding site for disease carrying vectors (e.g. malaria-bearing mosquitoes). Inadequate water for washing hands and cooking utensils and poor sanitation practices often result in diarrhoeal diseases. Disease and poor health are a heavy burden on the economy, the community,

the family and the industry. Improvements in water supply and sanitation can reduce the incidence of many of these diseases or eliminate them entirely.

One of the key issues in the design and implementation of rural decentralization in India is articulating clearly the roles of different levels of government in the provision of key public services. According to the Constitution, districts (Zilla Panchayats), block (Taluk Panchayats) and villages (Gram Panchayats) have responsibilities for primary education, primary health, water and sanitation etc., within their jurisdiction. Under 73rd and 74th amendments to the Constitution water supply and sanitation is one of the duties assigned to Gram Panchayats. GPs are providing latrines to rural people under different sanitation schemes like, Total Sanitation Campaign (TSC), Swacha grama etc. Inspite of these efforts, rural people are facing a lot of problems on account of waterborne diseases (cholera, typhoid and others) and sanitary diseases.

1.3: Rural Water Supply and Sanitation Situation in Karnataka

As per 2001 census about 3.48 crore people live in rural areas of Karnataka, spread over 56,682 habitations. Currently water is being provided to rural areas through 18919 Piped Water Supply (PWS), 24813 Mini Water Supply (MWS) and 199556 hand pump bore wells. In Karnataka, about 35 per cent are partially served by bore well with hand pumps and open well, 9 per cent by mini water supply schemes and 56 per cent by a mix of piped water supply and hand pump schemes (Saleth and Sastry 2004:163).

The service level of water supply stands 55 liters per capita per day (lpcd) in 37886 (67 per cent) habitations, and below 45 liters per capita per day (lpcd) in 18796 habitations. Thirty seven per cent of people are facing problems of quality drinking water and insufficient supply of water in rural Karnataka. Many schemes like Rajeev Gandhi Drinking Water Supply Scheme, Rain Water Harvesting, externally aided Rural Drinking Water Supply and Sanitation Projects, World Bank Assisted Jal Nirmal Project, Swajaldhara Project, etc., are being implemented through the Gram Panchayats.

Rural domestic water supply schemes in Karnataka are plagued by the usual ills and well-known deficiencies viz. dependence on ground water sources, especially deep ground water - for domestic water supply and hence lack of source sustainability; poor quality of electricity which hampers water pumping; competing agricultural demand; wastage from overflowing cisterns; bad quality of construction work; lack of institutional responsibility, especially for management of water; lack of a legal framework, etc.

Further, in Karnataka, as per 2001 census only 17.4 per cent of rural households were covered by toilets facility as against 6.8 per cent in 1991 while 75.2 per cent urban households had access to toilet facility in the year 2001 as against 62.5 per cent in 1991. It is clear that there is high disparity in access to sanitary facility between urban and rural areas. In this context the government of Karnataka implemented many schemes like Nirmala Karnataka, Swacha Grama etc., to improve the sanitation facility in the state. So there is an improvement in the access to toilet facility in rural areas. The provision of sanitary facility not only depends on government schemes or programmes, but requires more individual's effort and awareness in rural areas.

Dissatisfied with centralized approaches to delivering local public services, many state policy documents have charged local government (either district or village panchayats) with the responsibility of delivery of rural water supply and sanitation. However, very few states (Karnataka, Kerala) have actually taken up this function.

While rural drinking water supply and sanitation will continue to face many challenges a lot can be done socially and collectively, to ensure both equitable access and economic viability in Karnataka. Many studies Das (2000), Rajsheker et. al., (2006), Raju et. al., (2006) indicate the benefits from improvements in water supply and sanitation. Improved water supply and sanitation practices are instrumental in reducing infant mortality, preventing diarrohea, and improving nutrition and overall health, and this fact could be

used as a powerful lever in garnering support for improvement in water supply and sanitation.

The present study focuses on responsibilities of Gram Panchayats with respect to water supply and sanitation services with an effort to look into their role in providing water supply and sanitation facility to rural poor as against the norms and expectations. The study also looks into the existence and working of alternative institutional arrangement for better provision of their services.

1.4: Research Issues

Studies relating to the water supply and sanitation sector in Karnataka have examined the financing of water supply and sanitation, inter- district disparities with regard to the provision of adequate and safe drinking water and sanitary facility, and subsidies relating to water supply and sanitation sector. We find that studies have been carried out in isolation concentrating either on water supply or on sanitation sector. But water supply and basic hygiene (sanitary facility) are correlated to each other. In the present research work an attempt has been made to fill this research gap.

1.5: Research Questions:

The following research questions have been raised in the background of the review of literature discussed in Chapter II:

- What are the responsibilities of Gram Panchayats with respect to water supply and sanitation services under statutory provisions?
- Who are the other players in the provision of water supply and sanitation services.
- What are the current water supply and sanitation services provided by Gram Panchayats?
- What is the financial position of the GP with regard to drinking water supply and sanitation? What is the amount spent on this?
- How many rural households spend on the treatment of diseases due to poor quality and inadequate provision of water supply and sanitation?

- Are they willing to pay more for improved or additional services?
- Whether all social groups are getting equal supply of water and sanitation facility?
- What is the level of community satisfaction with regard to water supply and sanitation services?
- What is the role of community in the current provision of water supply and sanitation services?

1.6: Objectives:

- To study the current status of water supply and sanitation service delivery in rural Karnataka, India.
- To trace the flow of resources to rural water supply and sanitation from government and other agencies.
- To understand the accessibility to rural water supply and sanitation in selected Gram Panchayats.
- To study the finances of Gram Panchayat in the provision water supply and sanitation.
- To study the role of community participation on government water and sanitation schemes.
- To study the effect of poor water supply and sanitation on rural households and to derive policy conclusions.

1.7: Methodology

1.7 a. Coverage

The study covers Gram Panchayats in the state of Karnataka for understanding the nature of rural water supply and sanitation services in general. Dharwad district has been selected in particular. According to High Power Committee Report (2002) Dharwad is one of the moderately developed districts. There are 5 taluks in the district. They are Kundagol, Navalgund, Kalaghatagi. Dharwad and Hubli. Researcher has selected 2 taluks, one developed and one backward based on income, literacy rate and rural water

supply and sanitation schemes for collection of primary data. On similar grounds two Gram Panchayats from each selected taluk and two villages from each selected Gram Panchayats are covered for household survey. The sample size includes 235 households covered from 8 villages (Methodology has been discussed in detail in a separate Chapter III)

1.7. b. Data Sources

The study is based on both secondary and primary sources of information. The required secondary data (budgetary and financial data) is obtained from the Department of Rural Development and Panchayat Raj, Government of Karnataka. For financial allocations and expenditure at the district level the published as well unpublished accounts of Zilla Panchayats have been referred. The primary data is collected from Gram Panchayat records and through survey of households in selected villages. An analysis of the finances and services of Gram Panchayats helps in examining the adequacy of own resources against the grants and other sources to meet the financial needs of Panchayats in order to fulfill their responsibilities related to water supply and sanitation. The information from households was collected through administration of pilot tested schedules.

1.7. c. Methods

Descriptive statistics is used in the analysis of the data in the study. The budgetary data is analyzed by using simple percentage, averages, co-efficient of variations, etc. In order to examine the determinants of success of rural water supply and sanitation scheme, household tax system and other Gram Panchayat schemes on rural water supply and sanitation are considered.

1.8.: Outline of the Study

The thesis has been presented in nine chapters including the introduction. The lists of chapters are mentioned in below:

Chapter 1 : Introduction

Chapter II : Review of Literature

Chapter III : Methodology of the Study

Chapter IV : Current Status of Rural Water Supply and Sanitation in India

Chapter V : Status of Rural Water Supply and Sanitation in Karnataka

Chapter VI : Accessibility and Financing of Rural Water Supply and Sanitation Evidence from Dharwad District

Chapter VII : Community Participation in Rural Water Supply and Sanitation

Chapter VIII : Effect of Poor Water Supply and Sanitation

Chapter IX : Conclusions and Policy Implications

1.9. Limitations of Study

1. The present study ignores interstate disparities.
2. The study does not analyse Schemes on Water Supply and Sanitation at ZP and TP levels.
3. The present study has used data pertaining the period 1990 to 2009.
4. The focus is on rural water supply and sanitation excluding urban water supply and sanitation schemes.

CHAPTER-2

REVIEW OF LITERATURE

The importance of rural water supply and sanitation (RWSS) cannot be underestimated in its ability to prevent communicable diseases like gastrointestinal, typhoid fever, malaria, jaundice etc. Interventional RWSS is one of the most important issues of civic amenity and public health in the country. The review of literature indicates that issues such as access to rural water supply and sanitation facility, financing of rural water supply and sanitation, community participation, health and environmental problems and role of panchayats in water supply and sanitation in rural areas are the main themes examined by various researchers. Some empirical investigations carried out in different parts of country by various authors are summarised as follows.

2.1: Access to Safe Drinking Water and Sanitation Facility

Access to safe drinking water and sanitation could make tremendous impact on the quality of life in rural areas. But, supply of potable water and sanitation to a very large population is very complex and challenging task. In India many studies have examined the phenomenon of access to safe drinking water and sanitation.

A study conducted by Shah (1980) examined the access to rural water supply in 99 villages of 34 districts across 17 states in India during the year 1978. The study found that the drinking water points were proportionately less in the localities exclusively inhabited by the poor as compared to those inhabited by the non poor and argued that major public water supply benefit went to the non poor. According to this study more than 92 per cent respondents reported inadequate availability of water through these sources and suggested greater attention to be paid to the maintenance and repairs of the drinking water points particularly of bore well or hand pumps. Study points out the frequent breakdown in supply, inadequate duration, and point of collection, water level going down in summer and inadequate management as the main

reasons for inadequate water supply in rural areas. Based on the plan documents of the government of India, Kaul (1980) examined the progress achieved in various states regarding the supply of drinking water to villages. The study found that none of the states had full coverage of water supply in rural areas and all most all States were facing the problems of contaminated water. Study pointed out that in Karnataka out of its 27000 villages, 4309 remained uncovered by safe drinking water in 1978.

Varma's study (1981) assesses the magnitude and nature of the problem of convenient and safe water supply in Bihar. Study found that water sources were not working due to lack of minor repairs and those which were functional were not properly maintained. The study also explains the wrong choice of location of water sources primarily guided by socio-economic and political factors. Due to these reasons the study points out that rural people are not getting water supply within the accessible distance. The study suggests that, state government and Panchayat samities should try to achieve proper coordination between different functionaries to expedite the work of rural drinking water supply. Another study by Mathur (1986) examines the access to water supply, distance of availability and quality of water in rural India. Study indicated that about 2.31 lakh villages in the country require drinking water facility on a priority basis. Further, villages which did not have assured source of drinking water within a distance of 1.6 km and those villages where the water sources had too much salt, iron and fluoride, etc. are highlighted in the study. He argued that, an alternative capital intensive scheme is needed for providing adequate supply of safe drinking water in rural areas.

Mohsin (1988) has carried out a study to examine the status of water supply in the villages of two blocks each selected from 12 districts of Bihar. The study found that the maintenance of water sources specially the hand pumps has been badly neglected and the performance of PHED, the nodal organization for planning and execution of rural water supply has been quite dismal. Bijlani and Rao (1990) examined the rural water supply and sanitation

situation in India during the period 1981-1985. Based on NSSO and CSO data, the study revealed that, 72.9 per cent of urban households and 56.2 per cent of rural households had access to water supply in 1985. About 28.4 per cent of urban population and 0.72 per cent of rural population were covered by sanitation facility in India in the same year. They argued that with the increasing industrialisations and urbanization, the demand for water requirement has increased. The study found that nearly half of the total population did not have access to adequate or safe drinking water supply and nearly 95 per cent of the total population did not have sanitation (human and other waste disposal) facility.

Serageldin (1994) analysed water supply and sanitation coverage in developing countries during the period 1980 to 1990. The study pointed out that, a billion people still lack access to an adequate supply of water, and 1.7 billion do not have adequate sanitation facility in the world and found that adequate water supply and environmental sanitation quality is much worst in developing countries. Pushpangadan and Navaneethan (1998) analysed census and validation survey on rural water supply in Kerala a south state in India. The study estimates revealed that only 0 8 per cent of population was fully covered water supply, while 67 per cent remained uncovered. Of those 32 per cent partially covered, most received less than half bucket water a day. By applying Becker's model on allocation of time in rural households, they provided empirical evidence to identify travel distance and uncertainty of supply as factors significantly affecting the demand for public sources. The study concluded that there is a need to broaden the definition of coverage incorporating consumption, quality and settlement pattern of the villages. They argued that the coverage by habitation is not a real measure of availability of drinking water in Kerala. Pant (1996) studied rural water supply programme in eight district of eastern Uttar Pradesh. His study observed that only 23 per cent of habitation had access to safe drinking water sources and the proportion depending on unsafe water sources were much higher in selected district. Study clearly pointed out that the performance of the rural water supply programmes

in the selected districts has been somewhat disappointing and the prime reason for the poor performance has been the local inhabitants' poor response to these programmes.

Sachchidananda (1999) explained the sociological dimensions of rural water supply in India with particular reference to Bihar. The study covered 1,300 respondents across 130 villages in the State, taking into account social variables such as education, caste, religion, sex, exposure to media, and cultural constraints. Major findings of the study are as follows: (i) about 40 per cent of the respondents were not satisfied with adequate drinking water facilities. (ii) More than 85 per cent of the sample households were deprived of sanitation facilities as majority used the open air, river banks, forest, and roadside drains. Women's organizations for water supply never existed in rural Bihar. Many parts of the state experienced acute shortage of water during summer, forcing the villages to depend on traditional sources such as ponds, chauan, dari and pits dug in the riverbed. The study concluded that this situation existed on account of the failure of Panchayats and State to repair and maintain the source.

Ravichandran and Boopathi's study (2002) explained the socio-economic and environment related issues of drinking water provision in rural areas across the country with the help of NSSO data. Study focuses on access, usage and quality of water and reveals that access to modern sources has increased from 54.3 per cent in 1988 to 69 per cent in 1998. They argued that water quality is as problematic as quantity of water, and rural water users know little about the linkage between health and safe drinking water.

Kolavalli and Raju (2003) attempted to study the safe drinking water sources at Ghataprabha sub basin of Karnataka and observed that, the ground water is the predominant drinking water source in Ghataprabha sub basin, especially tube well/ open wells. According to the study about 85 per cent of the villages indicated their water supplies to be adequate; about 40 per cent villages experienced seasonal shortages and about 15 per cent of villages reported quality being unaccepted. Study overviewed the absence of sanitation

and found that sewage treatment appears to be a greater threat to the maintenance of water quality than industry caused pollution. The study concluded that as less than 10 per cent of total villages had toilet facility, it directly affected the water quality in rural areas. They pointed out that the protection of water quality is neglected and also sanitation often receives less priority than drinking water supply.

In a study, Veershekharappa (2001) shows that only 17 per cent households have latrines across the selected villages in Karnataka, which however are higher compared to national average of 2 per cent. He concluded that the line of progression from a supply driven top-down development strategy to a more demand driven, community based approach. Asthana (2003) examined the effects of decentralization on provision of rural drinking water supply in central India. The study covered the rural areas of two large Indian States namely, Madhya Pradesh and Chhattishgarh. He concluded that decentralized provision of water supply is less efficient in developing countries. Study pointed out the prevalence of corruption in the provision of public services in developing countries and the pressure of caste, tribe and local politics are too strong.

Ray (2002) has studied rural water quality problems in Gujarat and found that more than 85 per cent of the rural households depend on ground water for drinking purpose, a large part of which has high concentration of fluoride. Study found that due to urbanization and industrialization, use of pesticides and exploitation of the aquifer quality of water has been deteriorating rapidly. Study also found that in most of the area's water has been affected from excess fluoride, arsenic, iron and other pollutants.

Veershekharappa (2004) studied the accessibility and adequacy of water supply and sanitation in Gulbarga district and found that the per cent of households having access to safe drinking water and sanitary latrine is lower than the state average in Gulbarga district. He argued that lack of finance,

space, and lack of awareness are the main reasons for households for not having latrine.

Saleth and Sastry (2004) have studied water supply and sanitation sector of Karnataka during the period 1990-2001. The study shows that about 25 per cent of the population in Karnataka was not having access to adequate and safe drinking water and 75 per cent of the rural populations still did not have access to sanitary latrine and basic hygiene. It was concluded from the study that about 60 per cent of population consumes far less than 40 lpcd water, about 40 per cent of population consume below 20 lpcd water, and another 20 per cent have consumption in the range of 20-30 lpcd water. Notably, only 2 per cent of rural population use modern latrine facility in Karnataka. They pointed out the positive spillover effects on the water supply and sanitation sector from interventions in other sectors such as watershed development and democratic decentralization. A study by Pattanaik (2005) shows that many villages in the country still are without safe drinking water facility and also that women and adult girls travel a long distance to fetch drinking water. The study found that besides the lack of access to safe drinking water, some areas of the country are affected by excessive salinity, fluoride, nitrate and arsenic in ground water, making it unfit for human consumption. The study suggested that access to safe drinking water in terms of both quantity and quality should be treated as a fundamental right of individual.

Degaonkar (2005) has done a micro level study of two taluks in Gulabarga district of Karnataka state. The study found that only 40 to 50 per cent of rural population had access to drinking water, which is also inadequate and irregular. It was also found that the recent participative scheme had not received good response from the public. Study concluded that position of rural water supply is not satisfactory and water supply schemes are not implemented properly and their maintenance is very poor. Another study on drinking water and sanitation sector of Orissa in India by Mohanty (2005), found that urban and rural drinking water and sanitation projects are facing official obstruction

in spending, monitoring progress, creating awareness about the policies and also that the programmes were ineffective among poor communities in rural areas. He suggested that water supply must be safe otherwise, its potency to spread water borne diseases becomes very high, and also people should have sanitary awareness. Study pointed out that proper awareness is necessary to create demand and NGOs must be involved in execution of rural water supply schemes. Without awareness, safe water supply and sanitation programmes cannot sustain both in rural as well as urban areas. Kanmony (2006) studied rural sanitation and drinking water supply in Kanyakumari district and found that local government was not giving proper water supply and sanitation facility in rural areas. Study clearly argued that rural people especially the poor face hardship and suffering due to scarcity of drinking water. Nanaware (2006) studied the sanitation facilities at high school level for teachers and students in Malshiras Tehsill of Solapur district in Maharastra. The study revealed that the un-aided high schools did not have sanitation facilities to teachers and students and many students were ignorant about the importance of sanitation facilities.

Rajsheker et. al., (2006) used data of 5212 Gram Panchayats (90%), out of 5665 Gram Panchayats in Karnataka and discussed rural urban disparity in the provision of water supply source in Karnataka. The study revealed that a large proportion (84 per cent) of Gram Panchayats depended on multiple or more than one source for providing potable water to the people. Study argued that the provision of water supply and sanitation services are skewed in favour of urban areas and also it clearly brings out that the rural areas had poor access to it as against the urban areas. They felt that the provision of latrine facilities requires more individual effort than government.

Veershekarappa's study (2006) reveals that only 21 per cent of rural household actually have access to sanitation, and the study found that more than 80 per cent of households did not have toilet facility in relatively poor states like Orissa, Chattisgarh, Jharkhanda, and Bihar. But in Kerala about 84 per cent of the households have toilets attached to their houses. Study noticed

that wealthy households draw more than 40 lpcd water and poor households draw less than 40 lpcd of water.

Using data for 27 districts in Karnataka, Puttaswamaiah (2006) has examined the nature of environmental problems their causes and impact on the drinking water supply sector of Karnataka. The paper found that the districts like Bangalore Urban, Kolar, Tumakur, Udupi, Chitradurga, Dharwad, Gadag, Haveri, Raichur, and Bagalkot are suffering from inadequate quantity of drinking water supply. It was analysed that out of five municipal corporations only two municipal corporations (Mysore and Mangalore) people are getting adequate drinking water facility. He suggested that partially covered habitation in rural and urban areas should be brought under full coverage of water supply, and drought prone districts should be given high priority to resolve the problem of inadequate water supply.

Another study by Rajsheker et. al. (2006) for 20 districts in Karnataka for the period 1991-2001 found that, districts such as Bangalore Rural and Urban, Mysore, Bellary, Chitradurga, Tumakur, Hassan and Kolar had a coverage of more than 90 per cent water supply in both rural and urban areas. The study found that rural households were better covered by water supply than urban households but, the availability of toilet facility in rural areas was poor compared to urban areas. Hirway and Goswami (2008) studied the function of the drinking water component of the Narmada pipeline project in Gujarat and found that about 66 per cent of the villages covered under the Narmada Projects use well/ bore well and about 60 per cent of the villages suffer from shortage of water in the summer or throughout the year and also that more than 14 per cent villages had complaints about quality of water.

The literature review shows that inspite of many efforts by the state it has not been possible to provide water and sanitation to all the households in the rural areas. Most of the studies also show that households are using drinking water without purification. Almost all the studies also show less coverage and utilization of latrine facility especially in rural areas. This is

mainly because of lack of awareness about the importance of good sanitation. **Because of lack of resources, pressure of upper castes for getting government facilities and lack of political will, the households belonging to weaker sections are not getting the proper water supply and sanitation facilities. It appears that compared to the magniture of the problems only few studies have been conducted on rural water supply and sanitation, especially in Karnataka.** Therefore, a systematic study needs to be conducted to understand present status of water supply and sanitation in rural areas, especially its provision to weaker sections of the population.

2.2: Financing of Rural Water Supply and Sanitation

In India, the major sources of finance for rural drinking water supply and sanitation come from government agencies including central, state and local government, donor agencies etc., and also most of the developing countries provide drinking water free of cost as basic need to consumers. But, now it is realised that in the long run this approach cannot be sustained, and governments are finding it difficult to mobilize the required resources to improve.

Getachew (1981) studied the financial aspects of sanitation in rural Ethiopia and found that the share of sanitation sector in total financing is negligible when compared to water supply sector. According to the study weakness in preparation of plans, poor implementation capacity, inadequate emphasis on public sanitary education, deficiency in proper training for manpower, poor community participation, lack of knowledge on the benefits of sanitary service and shortage of funds from domestic and external sources are the main reasons for lack of sanitary facility in developing countries. He suggested that, provision of adequate funds both from local and external services can improve the level of sanitation programme.

A study by Serageldin (1994) reveals the challenges in financing water supply, sanitation and environmental sustainability. The author found that

water and sanitation in developing countries is much more seriously degraded, and is deteriorating rapidly due to far fewer financial resources available for environmental protection and week institutional capacity. However, he concludes that over the past thirty years developing countries have been allocating an increasing share of gross domestic product to public. spending on the provision of water and sanitation services to attain sustainable progress in improving the lives of people in developing countries.

Pushpangadan and Murugan (1998) using information provided by Rajeev Gandhi Drinking Water Mission estimated the replacement cost. operation and maintenance costs across all states in India. They supported the view of user financing towards capital, operation, and maintenance costs. which can generate resources for sustainable rural water supply in developing countries. Such a change in policy would help achieve efficiency, equity and sustainability. They analysed capital cost using annual expenditure data. which reaveled that about 90 per cent of the expenditure on Accelerated Rural Water Supply Programmes of Centre (ARWSP) and 60 per cent of the expenditure on Minimum Needs Programmes (MNP) were allotted for capital formation. Further, they calculated total capital cost for each year. For the operation and maintenance cost, owing to lack of data, they took 6 per cent of the cumulated capital expenditure, which is in line with the mission's suggestions. They concluded that the rural water supply was unsustainable and needs to be operated by collection of user charges.

Berardi (1999) shows how the State and federal agency funding for construction without the provision for operation and management needs. leads to financial burden on rural committees in Alaska village in United States. The study found that proper knowledge, transfer is a pre- requisite to fully understand and properly maintain sanitation system (from outside contractors to community members). Study suggested that the requirements for system upkeep. organized fee collection. operator employment and training. and record keeping place a demand on community resources.

Reddy (1999) studied rural water supply in selected 6 villages of Rajasthan during the year 1994. The study found that households did not incur any direct cost on drinking water, but incurred indirect costs, such as time spent and distance traveled to collect water. In connection with factors influencing water use, the regression results indicated a negative relationship between per capita use and family size, and positive relationship between high income and per capita use, and positive relation even with per capita time spent. However, distance traveled to fetch water did not turn out to be significantly related to per capita consumption. The Contingent Valuation Method (CVM) was used to elicit information on willingness to pay for water. The study found that variables such as distance, time, total annual expenditure, annual income, and percentage of household expenditure on health care were positively related with willingness to pay for improved water supply. One of the policy implications of the study was to continue the provision of hand pumps in the endowed regions. More importantly, the study rejected the notion that the willingness to pay for improved water supply was 5 per cent, but, found that it was less than 2 per cent of the total expenditure regardless of the economic background of the region. Study indicated the need for pricing of improved water supplies and emphasized discriminatory pricing, to reduce the burden on low income households.

World Bank's (2001) study in Uttar Pradesh explains how the poor sustainability of investments in the rural water supply sector encouraged the UP government to adopt two major policy reforms through the world bank-assisted Swajal project: 1.Partial cost recovery and full operational and maintenance cost recovery from user communities 2.The creation of an alternative service delivery mechanism for rural water supply and sanitation. Study concluded that the World Bank-assisted Swajal project was one of the first major rural water and sanitation projects to shift from centralized procurement and transfer investment funds to user communities, enabling them to procure materials, services, and works by themselves, assisted by support organizations. Another study by Ahmad et al. (2005) developed a framework

for evaluating the benefits and costs, in terms of service delivery of different approach to decentralization. They highlighted the fact that rural water supply and sanitation service delivery depends on the accountability of different factors in the delivery chain. They concluded that decentralization can, and sometimes cannot, lead to a better service delivery. In particular, the various instruments of decentralization – fiscal, administrative, regulatory, market, and financial, can affect the incentives accruing to service providers.

A study by Shiva Ram (2004) focused on the perceptions of providers and users in planning and management of drinking water and sanitation programmes in Arunachala Pradesh. Study found that around 96 per cent respondents opined that they were not willing to pay water charges. Therefore suggests levy of normal water user charges by the PHED, so that people pay the water charges.

A study by Veershekarappa et.al. (2006) focused on financing of rural water supply of Karnataka, India and examined the investments for drinking water and sanitation from government agencies, and some bilateral and multilateral agencies such as World Bank, DANIDA, UNICEF, etc. Study analysed the share of expenditure incurred (2.75 to 5.76) on RWS to total state expenditure for the year 1992-2004, and found that user charges, and capital expenditures could contribute to sustainable water supply in rural areas. They suggested that, financing for regular supply of water can be an engine for accelerated economic growth, sustainable development, improved health and reduction in poverty.

The above literature shows that many programmes have been implemented by the central and state governments for provision of water supply and sanitation. Many external agencies and NGOs are also actively involved. These programmes are mainly concentrated on urban areas rather than rural areas and hence rural areas have been getting very less allocations.

The studies have shown that the allocated money has not been spent fully for the said purpose. The factors such as lack of willingness to pay by the households and low tax collection have contributed for less coverage of rural water supply and sanitation facilities. **Therefore, there is a need to do an indepth study of sources of financing for rural water supply and sanitation viz. central government, state government, local bodies, external agencies and NGOs, the actual financial position of Gram Panchayats and whether households are willing to pay for provision of water supply and sanitation facilities.**

2.3: Community Participation in Rural Water Supply and Sanitation Scheme

Community participation is strongly advocated in rural water supply and sanitation facility in India. Some studies examined the community participation with regard to the water supply and sanitation as discussed below.

Community water supply and excreta disposal in the developing countries studied by Subrahmanyam (1977) examines communities' involvement in the design, construction and implementation of rural water project. Study found that many rural communities need at least partial assistance from the central exchequer in construction of some water supply system. Author opines that participation of community should start right at the beginning of the planning stage and continue in maintenance and operation. Mzee (1981) emphasized the training requirements for proper operation and maintenance of community water supply projects run by public institutions in Tanzania. The study found that educated and trained people better managed and operated community rural water supplies and suggested that the objectives of community rural water supplies should be clear and practiced in reality. Another study by Mbere (1981) focused on community participation in provision of sanitation in Botswana country. The study found that, social problems like poverty, unemployment, under education, residential mobility,

inadequate housing, and poor health are the main reasons for lack of community participation in rural sanitation programmes. He argues that the community participation has not been a major component of water supply and sanitation in developed or industrialized countries compared to developing countries and can be a very powerful tool in sanitation programme in underdeveloped countries, if it is used properly.

A study by Haile (1981) examined community participation in rural water supply development in Ethiopia and revealed that community participation is playing a significant role in increasing community awareness and a sense of responsibility and pride of ownership toward the village water supply scheme. The study noticed that women also participated in environmental sanitation, reforestation programmes, co-operative farms and other rural development projects including rural water supply development.

Getechah (1981) attempted to assess and describe the role of women in rural water supply in Kenya. The study found that women had comparately higher sense of organization than men and more number of women approached the relevant agencies for financial assistance to get water on reliable and regular basis in rural areas.

Veershekharappa's (1990) study on 1114 villages of Karnataka, explains the role of village water supply communities in getting drinking water to rural areas. Study found that inefficient power supply is a major problem for inadequate and untimely supply of water in rural areas. He pointed out that village water supply communities were a success only at the stage of planning and implementation and failed in operation and maintenance. Pant (1996), examines community participation and NGOs' involvements in rural water supply programme in eastern Uttar Pradesh. Although the study explains that, the rate of participation by community and NGOs is minimal, it emphasizes the need for utilizing their services in the areas of creating general awareness, promoting health, hygiene and education. Mukherjee (1994) conducted study on rural women and panchayat raj institutions in Thane district of Maharastra

and examined the importance of women's participation in gram Panchayats which is at present monopolized by men. It is concluded that women's participation would help in improving the conditions of women and also improving their status in society and hence add directly to the well being of households in particular and that of the nation at large. Kirti Kumar (1994) emphasized improving female literacy in strengthening women's empowerment in rural India. Education plays a vital role in enabling the weaker castes and classes to function with representative holding on equal terms with traditional high castes. It is felt that governments, NGOs and people themselves should involve in social transformation. A study conducted in six developing counties (Kenya, Cameroon, Nepal, Pakistan, Guatemala and Colombia) by Lammerink (1998), reveals that without the full involvement and commitment of the community the rural water supply cannot be successfully implemented, or operated, and cannot maintain a network of widely dispersed water systems. The study concluded that the community management of service should be backed by measures to strengthen local institutions in implementing and sustaining water and sanitation programmes.

Another study by Veershekharappa (2001) examining the community participation in supervision and monitoring of rural water supply and sanitation, found that about 59 per cent of the households had contributed for water supply. He suggested that NGOs, SHGs and communities should be involved in rural water supply and sanitation programmes.

World Bank's (2001) study examines close inter-relationship between three organization types: village communities, NGOs and the project management unit, an autonomous state level society. Study concluded that in community driven approach of the project, all important decisions at the village level, such as technology choice, management of investment funds and contracting of goods, works and services, are made by the community. Osmo (2002) examines development trends in water and sanitation policies and strategies of donor organizations in four developing countries (Kenya,

Zanzibar, Srilanka, and South Africa). Study found that implementation of reform process in the field has often failed because of the inadequate involvement and commitment of stakeholders at all levels. The study argued that successful policy and reforms implementation requires political will and facilitation with technical, economic, environmental and social considerations.

Ray (2002) examines the involvement of village level committee in managing supply of water facility in rural Gujarat. The study found that the NGOs have successfully experimented with the low cost alternative technology to treat the drinking water having excessive fluoride and are also creating awareness about water quality in rural people. Shiva Ram (2004) examines water and sanitation committees in Arunachal Paradesh and found that these committees are creating intensive awareness especially in operation and maintenance for rural water supply and adoption of sanitation programmes. Author suggests that water and sanitation committees should be constituted in every Gram Panchayat with the help of local NGOs, elected representatives of PRIs and tribal headman for effective operation and maintenance of drinking water supply and sanitation system.

Veershekharappa (2004) examined community participation in water supply and sanitation in Gulbarga district and found lack of people's participation and lack of awareness as main reasons for households not having latrines. He suggested that community groups should create awareness about subsidy, health issues and different sanitary schemes in households. Women's participation in two World Bank assisted rural water supply projects in 45 villages in Uttar Pradesh and Karnataka, India examined by Prokopy (2004) found that although very few women participated in rural water supply project, they attained more confidence to involve in rural water supply programmes. The study concluded that there was no relationship between women's participation and success of rural water supply programme.

Pattanaik (2005) examines community participation at all stages of water supply programmes, such as formulation, construction, operation and

maintenance in rural areas and found that it leads to better upkeep and increase in the life span of the water supply system. Author suggested that collection of user charges be borne by the water management committees in coordination with Gram Panchayats.

Veershekarappa (2006) studied the aspect of community contribution in operation and maintenance of environmental sanitation. Study found that potable water and sanitation is inextricably linked to presentation of disease and improves the quality of life and thus reduces poverty. He concluded that the village water supply committee is ineffective on organization. function. lack of political will, owing to lack of statutory power and inherits most of the demands of the Gram Panchayats.

Nisha (2006), using primary data collected from 200 households in Malappuram district of Kerala tried to find out the factors affecting community participation in rural water supply schemes. The study used regression model for analysis of factors affecting community as well as households participation and found that male participation was active in group meetings as compared to female members. She found that per capita income of the households had negligible impact on participation but high income category households had a larger influence on the decision making.

The literature shows that many studies have been conducted on the involvement of local people, local organizations, NGOs and other institutions in rural water supply and sanitation. **However, these studies do not satisfy on the extent of awareness creation and promotion of health and hygiene due to community participation. The issues of people's participation (especially women) in meetings of Gram Sabha/Ward Sabha, ability of the members to raise questions and the extent of questions raised, enquiring about the steps taken to solve the problems, etc. need to be studied systematically.**

2.4: Water Supply, Sanitation Facility and Health Issues

Rough measures of water and sanitation related diseases can be made by estimating the degree to which water improvement reduced the incidence of diseases from the maximum which would have prevailed with scarce and heavily polluted water supplies. The well-known infections, such as typhoid, cholera, and malaria may be augmented by various other infections where poor quality of water and sanitation reaches very high levels. A few studies have highlighted the impact of rural water supply and sanitation on human health.

Getachew (1981) found that the health agencies played a crucial role in an effort to integrate the rural water supply and sanitation services as part of primary health care and argued that such kind of linkage accrue maximum health and socioeconomics benefits. A study by Bomba (1981) examined the role of health education in sanitation programs in Malawi and observed that various expert committes on environmental sanitation have stressed the need to incorporate health education as an integral part of sanitation planning. The study found that health education programmes placed special emphasis on providing information about sanitary facility and their related diseases.

Haile's (1981) study revealed that poor quality of water greatly led to deterioration of health and that more than 70 per cent of the prevalent diseases in rural Ethiopia were due to poor quality of water. The study showed that water disposal, methods of handling excreta and solid waste were the main causes of surface water contamination. The study argued that poor perception on the importance of water was the main factor greatly contributing to the deteriorating state of health in rural areas.

Bijlani and Rao (1990) examined that nearly 10 million people every year suffered from water related diseases. According to the study lack of adequate or clean water supply and low level of awareness of user groups towards environmental hygiene are the main reasons of ill health in rural areas. Study pointed out that the benefits of improved water supply and sanitation not

only reduced the incidence of diseases, but also a markable decrease in morbidity with greater life expectancy and an overall promotion of the state of well being of the population.

Panda (1997) conducted a study in Bolangir district of Orissa, India in 1989-90 and examined the effects of safe drinking water and sanitation on diarrhoeal diseases among children in rural Orissa. He found that water supply and sanitation conditions directly affected contamination of the household environment and thus resulted in increased incidence of various diseases. The logistic regression model was used to find out the results. Result showed that the per capita income and mother's education had negative effect on occurrence of childhood diarrhea. He argued that, high level of poverty, low access to safe drinking water and sanitation caused higher rates of diseases and deaths among children.

Another study by Reddy (1999) emphasizes on the idea of clean and safe water. The study found that about 50 per cent cases of ill health were due to water borne diseases and stressed on safe drinking water to ensure public health. He vindicates the hypothesis that rural people are aware of the link between health and improved water supplies. Study argued that public policy needs to be geared to meet the future demand for improved water supplies. A study by Bansil (2004) examined water problems in rural India based on secondary data. The study stresses on the health problems associated with unclean water and found that about 3.4 million people are killed every year by water related diseases, and 2.1 million (mostly children) die from diarrhoeal diseases stemming from lack of access to clean water, inadequate sanitation, and poor hygiene. The study concluded that about 70 to 80 per cent of illnesses were related to water contamination and poor sanitation, women and children being more vulnerable to the effects of water contamination.

Raju et.al (2006) found that 3279 villages in Gujarat and 21088 habitations in Karnataka were facing water quality problems, resulting in poor quality of life, high health expenditure and waste of human hours. The study

pointed out lack of skilled staff, poor co-ordination, and lack of awareness in water supply schemes and revealed that fluoride in water was the main cause for the harmful effects on human health. They suggested that the water quality problem should be addressed with a planned approach beginning with identification to completion and GPs should have the required strength to manage at the ground level.

Studies have shown that about 80 percent of the diseases in the rural area are waterborne. Inadequate and poor quality of water and improper sanitation are mainly responsible for spread of diseases. **The burden of these diseases is very severe in terms of death and loss of working days, apart from huge amount of money. The literature review shows that only few micro level studies have been conducted on issues related to prevalence of water and sanitation related diseases.**

2.5. Panchayats and Rural Water Supply & Sanitation Facility

Arun Kumar Singh and Ravi Kumar Singh (1996) examined various aspects of the status of panchayati raj in Uttar Pradesh. They revealed that it is necessary to set down the powers and functions available to panchayats clearly so that panchayati raj institutions may become effective instruments for local level planning and development.

Ghosh (2004) conducted study on role of panchayats' in rural infrastrure. Based on the study of five Gram Panchayats in Nadia district, West Bengal, he observed that panchayats are in better position to identify local preferences and priorities for infrastructure services. The Study argued that the gram sansad meeting is helpful for gram panchayat with regard to the schemes of economic development, social justice and identification of the beneficiaries for various poverty alleviation and allied programmes. It is also felt that the poor attendance in the gram sansad meeting is an ample proof of the fact that in the process of decentralizing the planning exercises, people's involvement is very rare and decisions are mostly taken unilaterally by the panchayats under

the order of the political party controlling the panchayats. The Study concluded that though Panchayats have important role, they have not been completely successful in selecting proper water source spots and recognizing women's choices.

Mavalankar and Shankar (2004) examined the status of sanitation and water supply and its importance in improving the health status in India. Based on the NSSO data, it is found that India has made reasonable progress in improving access to water but the situation of sanitation is highly unsatisfactory, especially in rural areas. Low social and political priority combined with poor planning and implementation and lack of knowledge are mainly responsible for slow progress in sanitation and water supply in India. Study suggests that there is an urgent need to increase political and social priority to sanitation and water supply at Panchayat level. It is also suggested to control non priority expenditures so as to increase resource allocation to water supply and sanitation. Rajsheker et. al. (2006) examined the finances of Gram Panchayats and found that the poorer districts were in a better position to impose and collect water user charges. Raju et. al. (2006) conducted a study in 20 villages spread over 10 districts of the Karnataka state. They argued that the Gram Panchayat is completely responsible for operation and maintenance of piped water supply and mini water supply implemented by ZP. The study stated that the Gram Panchayat is responsible for fixing water charge, obtaining households connection and collection of deposit and monthly charges, and they pointed out that GPs with dominant politicians got more share than the needy villages.

A study conducted by Indranil De (2009), examined the rural water supply services in six villages in Birbhum district of West Bengal. The Study revealed that quality of water supply service is better in areas where the responsibility of operation and maintenance has been devolved to the local

government than the Public Health Engineering Department (PHED) participation in operation and maintenance. The Study also felt that household's contribution for maintenance has positive impact on quality of water supply services. Thus, it is found that that decentralization has a positive impact on water supply in terms of quality.

Poojary (2010) has explained the relationship between institutions of decentralization and development in Karnataka. For the study he compared Coastal Karnataka and Interior Karnataka. The Study also found that Panchayats of interior Karnataka are very poor in practicing procedural democracy and their members do not participate either in the members' meetings or in the village council meetings. Study concluded that the decisions made in the meetings are not implemented because of the lack of cooperation among the members. It is pointed out that the overall performance of panchayats of coastal Karnataka in organizing member's and village council meetings was far better than the panchayats of interior Karnataka. On the whole, the study revealed that Panchayats have failed to deliver the benefits to the needy in Karnataka.

Mandal (2011) examined efficiency and effectiveness of rural water supply and sanitation services in West Bengal. The study reveals that majority of rural households are getting safe drinking water but most of the households are still lacking sanitation facilities. It is observed that some of the families do not have the practice of using sanitation though it is available at their house. This indicates the lack of health consciousness of the rural population. The study concluded that supply of sanitation materials to the rural people is not the only solution. The proper sanitation lies in its effective management in organizing sanitation drive towards raising the level of social consciousness.

The studies discussed above show the importance of Gram Panchayats in providing safe drinking water and sanitation to rural households. Gram Panchayats are mainly responsible for operation and maintenance of water supply and sanitation in rural area. **The studies further indicate that only a**

few Gram Panchayats have performed well in providing these facilities. In this context, a systematic study of provision of these facilities, in terms of finances, programmes, operation and maintenance, tax collection and services given by GPs needs to be studied in Karnataka.

2.6. Major Findings of Literature Review

Quite a number of studies have been conducted on rural water supply and sanitation in different parts of India and across the world but very few studies have been conducted in Karnataka. Moreover, the studies are mainly based on secondary data and covered only one sector, i.e. either water supply or sanitation. Further, these studies have concentrated on access, usage and quality of water supply. None of the studies have focused on the role of Gram Panchayats in operation and maintenance, tax collection and people's participation. The studies conducted in Karnataka focused mainly on south Karnataka with a very few studies on north Karnataka. North Karnataka is a dry region with problems of frequent drought and regional disparities are noticed in the provision of basic amenities and infrastructure, particularly water supply and sanitation. In this context, a systematic study on rural water supply and sanitation in North Karnataka seems relevant to fulfill the research gap.

CHAPTER-3

METHODOLOGY OF THE STUDY

3.1 : Sampling Design

3.1 A. Selection of District

Karnataka is selected for the study and it is a progressive state in many respects. The state of Karnataka is one of the largest states in the country, having an area of 1.91 lakh sq.km and the High Power Committee for Redressal of Regional Imbalances divides the entire 27 districts (Excluding newly reorganized districts like Ramanagar,Yadgiri and Chikkaballapur) of Karnataka into four divisions using district-level Cumulative Deprivation Index (CDI). The names of the four divisions are Gulbarga, Belgaum, Bangalore and Mysore. Each division consists of backward and developed districts, which are identified on the basis of Composite Development Index. Belgaum division has been selected for study. Belgaum division consists of 7 districts viz; Bagalkot, Belgaum, Bijapur, Dharwad, Gadag, Haveri, and Uttara Kannada. Among these, Bagalkot, Gadag and Haveri districts were newly formed in 1997 as per the Government of Karnataka's districts re-organisation policy[1].

Dharwad district has a history of 900 years. It is famous and well known for its rich cultural heritage compared to other North Karnataka districts. It is in a way better placed in case of education and other aspects. The North Karnataka districts are facing lack of infrastructure facilities, especially related to water and sanitation. Dharwad in particular represents all other districts of North Karnataka region. For this reason, Dharwad district has been selected for the study.

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[1] In the year 1997, seven new districts were created out of erstwhile twenty. Chamarajnagar from erstwhile Mysore District, Davangere from erstwhile Chitradurga, Bellary and Shimoga districts, Bagalkot from erstwhile Bijapur District, Gadag and Haveri from erstwhile Dharwad district, Udupi from erstwhile Dakshina Kannada district, Koppal from erstwhile Raichur district were carved out vide Govt. of Karnataka notification No. RD 42 LRD 87 Part III, Bangalore, dated 2 8 1997.Census (Provisional) report, 2001, for Karnataka.

Background Profile of Dharwad

Dharwad district is situated in the Western part of the northern half of Karnataka State. The district encompasses an area of 4263 sq. km lying between the latitudinal parallels of $15^{0}02'$ and $15^{0}51'$ north and longitudes of $73^{0}43'$ and $75^{0}35'$ East. The district is bounded on the North by the district of Belgaum, on the East by the district of Gadag, on the South by Haveri and on the West by Uttara Kannada districts all belonging to Karnataka state.

Table 3.1: Profile of Dharwad District

District Profile	Number
Geographical area (in Hectares)	427329
No. of. Revenue Blocks (Taluk)	5
No. of. Gram Panchayats	127
Total Villages	371
No. of Habitations	466
No. of. Elected Zilla Panchayat members	18
No. of. Elected Taluk Panchayat members	66
No. of. Elected Gram Panchayat members	1570
Total Population	1604253
Rural Population	722336
Urban Population	881917
SC/ST Population	202411
Density	377
Sex Ratio	949
Literacy	71.87
Per Capital Income (during 2002-03) (in Rs)	22281
Total Workers	685191
Cultivators	179877
Agricultural labourers	185509
LPCD of water (more than 55 LPCD)	193
No of Piped Water Supply	412
No of Mini Water Supply	360
No of Hand pump/ Bore Well	2542
No of Latrines	28569

Source: GOK (2006-07) Dharwad District at a Glance

There are five revenue blocks or taluk's in the district, namely; Dharwad, Hubli, Kalaghatgi, Kundagol and Navalagund. The district has 127 Gram Panchayats and 352 villages and 6 towns existing in the district. The district has its own peculiarity with urban population being more than rural population as per the 2001 census. The details of population statistics are given in the district profile (Table 3.1).

Agriculture is the main occupation in the whole of rural area of the district. Therefore, other activities of economy, i.e., trade and commerce are completely dependent on agriculture. Manufacturing industry, particularly agro-based industry makes a significant contribution to the economy. Hubli-Dharwad is a major commercial center in the State. Of the total population, 39% makes up for working class. This consists of 26% of those engaged in agriculture sector. Till today, agriculture is a labour intensive enterprise. Many labourers largely depend on seasonal employment. Around 420 Piped Water Supply, 360 Mini Water Supply, 2542 Hand pump/ Bore Wells are supplying drinking water in the district. Inspite of there facilities only 193 villages are getting more than 55 lpcd water.

3.1. B. Selection of Taluks

The government of Karnataka's High Power Committee for Redressal of Regional Imbalances has broadly divided the entire 175 Taluks of Karnataka state into two categories, viz. Backward and Relatively Developed. They have constructed a Comprehensive Composite Development Index (CCDI) by taking 35 indicators for each Taluk. Based on the CCD index value, they have categorized the taluks. The taluks whose index values are equal to or above '1' are classified as relatively developed taluks, whereas the taluks who's CCDI values are less than '1' are classified as backward taluks. Among backward taluks, again three classifications have been done. The taluks whose index values are in the range of 0.89 to 0.99 are classified as 'Backward Taluks': the taluks whose index values are in the range of 0.80 to 0.88 are classified as 'More Backward Taluks' and the taluks with index values in the range of 0.53 to 0.79 as 'Most Backward Taluks'.

There are 5 taluks in the Dharwad district; they are Kundagol, Navalgund, Kalaghatagi, Dharwad and Hubli. Based on classification of High Power Committee for Redressal of Regional Imbalances one most backward taluk (Kalagatagi) and one relatively developed taluk (Dharwad) in the Dharwad district have been selected for the study purpose.

3.1. C. Selection of Gram Panchayats

Karnataka, with 5652 Gram Panchayats, 175 Taluk Panchayats and 27 Zilla Panchayats (Excluding newly created districts like Ramanagar and Chikkaballapur) involving a total of 93,810 elected representatives, provides an interesting opportunity to study Gram Panchayats and rural water supply and sanitation. The Dharwad district selected for study purpose has five taluks, 127 Gram Panchayats and 352 villages. We have selected four Gram Panchayats. Based on the objectives of the study, we choose one developed and one less developed Gram Panchayat from each taluk in order to be able to identify factors that influence performance. The four Gram Panchayats selected are, Yerikoppa (developed GP) and Kanakur (less developed GP) in Dharwad taluk, Madkihonnihalli (developed GP) and Galagi (less developed GP) in Kalaghatagi taluk (Details are given in table 3.2).

Table 3.2: Profile of Selected District, Taluks, GPs and Villages

Division Name	District Name	Taluk Name	GP Name	Village Name	No of HHs	Selected HHs (10%)
Belgaum	Dharwad	Dharwad	Yerikoppa (Developed)	Yerikoppa	283	28
				Nayakanahulikatti	119	12
			Kanakur (Less Developed)	Kanakur	134	14
				Kavalgeri	334	34
		Kalaghatagi	Madkihonnihalli (Developed)	Madkihonnihalli	312	31
				Hindasgeri	167	17
			Galagi (Less Developed)	Galagi	835	84
				Hasarambi	165	17
Total		2	4	8	2349	235

Methodology of Classification of Gram Panchayats as 'Developed' and 'Less-Developed'

To identify the developed and less developed Gram Panchayat seven indicators relating to demographical, social and economic factors were considered. There are many development indicators, and we have taken only seven indicators, because of non-availability of relevant data. All indictors as mentioned in Table 3.3, have been collected from census 2001 and Zilla Panchayat's annual report. The following indicators are considered in our study.

Table 3.3: List of Indicators

SL.No.	Name of Indicator	Data Source
I.Demographical Indicators		
1	Density of Population	Census (VD)
2	Sex ratio	Census (VD)
3	Percentage of SC and ST population to total population	Census (VD)
II Infrastructure facilities (Socio- Economic Indicators)		
1	Per capita income of the GP	Census (VD)
2.	Percentage of area irrigated to total cultivable area	Census (VD)
3	Literacy rate	Census (PCA)
4	Proportion of villages having safe drinking water facility (LPCD)	Zilla Panchayat (Annual Report)

Note: VD; Village Directory, PCA; Primary Census Abstract

On the basis of these indicators, composite index of each Gram Panchayats has been estimated. Table 3.4 reveals computation of indicators.

Table 3.4: Computations of Indicators

SL.No.	Name of Indicator	Computation
I Demographical Indicators		
1	Density of Population	*Total population of the GP divided by total area*100*
2	Sex ratio	*Female population of the GP divided by male population*1000*
3	Percentage of SC and ST population to total population	*Total SC/ST population of the GP divided by total population*
II Infrastructure facilities (Socio- Economic Indicators)		
1	Per capita income of the GP	Total per capita income of the GP divided by total population
2.	Percentage of area irrigated to total cultivable area	Total irrigated land divided by total cultivable land * 100
3	Literacy rate	Total no of literate person divided by (Total population minus less than 6 year population)*100
4	Villages having safe drinking water facility (LPCD#)	Total LPCD of the GP

LPCD= liter per day per person consumption of water

Construction of Composite Index

Taxonomic method has been used because; this method helps to construct such an index, which would be able to rank different Gram Panchayats without assuming any statistical distribution[II] (Behera and Mitra, 1996). The steps involved in the computation of composite index of level of development of each Gram Panchayats are as follows.

At first, indicators of development are collected. Secondly, original values of the selected indicators are converted into standardized values so that addition is possible. Conversion of the original values into standardized values is done by a formula as given below[III].

[II] Principal component analysis assumes that the indicators are linearly related

[III] The formula has been used for measuring developed and low developed gram panchayat, referred from Behara and Mitra (1996), "The standard of living in India: an attempt towards inter regional study", Indian Journal of Regional Science, Volume XXXVII, issue no 2.

$$Z_{ij} = \frac{X_{ij} - \bar{X}_j}{S_j}$$

Where

$i = 1,2,3,.....,n$ Gram Panchayats

$j = 1,2,3,.....k$ Indicators, and

$\bar{X}_j$ and S_j and are the mean and standard deviation respectively of each indicator

Thirdly, from the standardized values, taking the highest standardized values of that indicator identifies an ideal Gram Panchayats for each indicator. From the highest standardized values, deviations of the values for each Gram Panchayats are taken for all indicators. After this, the pattern of level of development of each Gram Panchayats is determined through the following formula.

Formula

$$P_{i0} = \sqrt{\sum_{p=1}^{k} (Z_{ip} - Z_{op})^2}$$

Where,

P_{io} = Level of development of i^{th} Gram Panchayats.

Z_{ip} = The standardized value of the i^{th} Gram Panchayats and k^{th} indicator.

Z_{op} = The highest standardized value of the k^{th} indicator.

The last step is computation of composite index of the villages. It is found through the following formula.

$$D_i = \frac{P_{io}}{P_o}$$

Where D_i = Composite index of the level of development of i^{th} Gram Panchayats

$$P_0 = P + 2\sigma P_{i0}$$

$\bar{P}$ and P_{i0} are the mean and standard deviations respectively of the pattern of level of development.

To classify Gram Panchayats as developed and under developed villages the mean value of Di is considered. The Gram Panchayats having values above the mean are considered as less developed, and below the mean as developed Gram Panchayats' A structured schedule was used to collect the information regarding number of villages, different sources of water supply, programmes, financing on rural water supply and sanitation, etc. from the Gram Panchayats.

3.2: Sample Size and Data Collection

3.2. a Selection of Villages

After listing out the entire villages of 4 GPs, two villages were randomly selected from each of the two GPs. Totally 8 villages are covered in the study to collect village information and household's information. A village with Gram Panchayat headquarter has been selected. The researcher discussed with secretary and members of Gram Panchayat to select another village far from the headquarter and backward in terms of facility, particularly, water and sanitation.

3.2.b Selection of Households

Once the primary information on the village and the Grama panchayat activities had been collected, it was necessary to know the views of the people regarding the water supply and sanitation services and the benefits that they are getting from the programs undertaken by Gram Panchayats. The focus was on understanding the reasons for too much dependance of households upon the panchayat in getting drinking water supply and sanitation facility in the village.

Eight villages have been seclected from 4 Gram Panchayat to collect household level information.

The study is based on five stage systematic sampling method with households as basic unit of survey. To elicit household level information the researcher interviewed 10 per cent of the household from the each selected village. Accordingly the total sample size amounted to 230 households in 8 villages of 4 Gram Panchayats. The households were selected by using circular systematic random sampling method. The list of households available from Gram Panchayat was the base for identifying the households. The total number of households in each village was divided by the sample size for each village to get the interval between the households. Every next household at the arrived interval was included in the study. The first household was chosen by using random number tables. The households in the outskirts of the village were also covered to include vulnerable groups in the survey.

Interviewing the Stakeholders: The stakeholders who have been interviewed include panchayat seeretaryes, presidents, members, and village leaders. The information was gathered through structured questionnaires, and exploratory and informal interviews. Structured and exploratory interviews aimed to understand the structure and the function of the panchayats, about the rural water supply and sanitation services, infrastructure and programs that have been taken up in the villages. The opinion of the group regarding drinking water, sanitation and hygiene were gathered through interview. The discussions focused on accessibility and adequacy of the water supply, adoption of the latrine in the individual household, and village sanitation.

3.3: Field Experience and Observations

Researcher visited all the Gram Panchayats and selected villages to study the situation analysis of water supply and sanitation in rural areas. Researcher discussed with district executive officer and taluk executive officer on selection of Gram Panchayats and took their advice. The objectives of the

study were explained to Gram Panchayat secretary and villagers. It was found that the Gram Panchayat secretaries had not maintained records properly. Therefore, it was difficult to get village level information. The households expect that their houses to have piped water source and individual latrine at government cost. Some of the households were found to be least concerned with quality of water and village sanitary system.

Observations regarding drinking water, sanitation, condition of drains, garbage disposal, disposal of human excreta, and habit of villagers regarding cleanliness and storage of drinking water in rural areas were recorded properly. We paid attention to these points while collecting field data. Villagers are much concerned with the availability of water but least concerned about the quality of water. Sanitation is not considered as a health problem among the villagers. Although people denied the existence of any problem of health during household survey, in depth interviews revealed the prevalence and incidence of cholera, dysentery, skin disease, cold and other diseases was common.

3.4: Tools of Data Collection

3.4. a. Primary Data

The primary data regarding this study has been gathered through administration of the schedule, interview guide, and Gram Panchayat profile and observation notes. The schedules used for data collection included Gram Panchayat schedule, village schedule, and household schedule. The Gram Panchayat schedule elicits information on different government programmes on water and sanitation, various grants and schemes on water and sanitation at Gram Panchayat levels in Karnataka. The village schedule gives information on the socio- economic situation in the village as well as status and problems regarding water and sanitation in rural areas. The household schedule brings

out the information regarding socio economic condition of people, accessibility to water supply, sanitation facility and problems in service delivery. Information has been collected through frank and informal conversation with the household heads, leaders, villagers, women, and Gram Panchayat official staff.

3.4. b. Secondary Data

Secondary data has been collected from available literature, such as official reports, and other published materials, and from various national and state level departments like Ministry of Rural Development Government of India, Ministry of Water Resources Government of India, Rural Development and Panchayat Raj Department Government of Karnataka. For financial allocations and expenditure at the district level the published as well unpublished accounts of Zilla Panchayat have been referred.

CHAPTER - 4

CURRENT STATUS OF RURAL WATER SUPPLY AND SANITATION IN INDIA

4.1: Introduction

Water supply and sanitation in rural India continue to be inadequate, despite longstanding efforts by the various levels of government and communities at improving coverage. Water supply and sanitation are not just considered as basic human rights but also play an important role in the lives of people and in the economic development of the country. So, one of the prior responsibilities of Government is to ensure adequate supply of protected drinking water and hygienic disposal of waste material in the country especially in rural areas. Six thousand children die every day in the world from diarrhoeal diseases alone, and large proportion of diarrhoeal disease in the developing world is due to poor water, sanitation and hygiene (UNICEF, 2003). In India the health effect of poor rural water and sanitation have been underemphasized. Investment in water and sanitation can be an engine of accelerating economic growth, sustainable development, and improved health and finally reduction of poverty (Veershekharappa, et.al; 2006:1). Considering these facts, the Millennium Development Goals (MDG) was to halve, by 2015, the proportion of people without sustainable access to safe drinking water and sanitation. Meeting the MDG target in rural areas requires approximately Rs.700 billion for the 11^{th} and 12^{th} plans, with similar recurrent expenditure.

Government intervention and public agency provision of water supply and sanitation in India has been in existence from long time. The financial sources to water supply and sanitation constitute all proceeds from the internal and external assistance. The central government, state government, local bodies (Zilla Panchayat, Gram Panchayat, and block levels), private institutions and user tax all constitute the internal sources. Contributions from external assistance or donor agencies like World Bank, Danish International Development Agency (DANIDA), Netherland etc., have been marginal.

Establishing sound principles for pricing water supply and sanitation services would result in financial and economic efficiency, and equity. This chapter examines the current status of rural water supply and sanitation and financing of rural water supply and sanitation in India.

4.2: Overview of Rural Water Supply and Sanitation in India

Provision of drinking water and sanitation in rural areas is the responsibility of the government and funds are provided in budget. Hence, after independence of India, the state and central governments have been implementing several programmes and schemes on water supply and sanitation in rural areas. The Bhore committee (1946) for the first time pin-pointed the importance of safe drinking water supply and provision of sanitation on a country-wide scale. The Government established the Environmental Hygiene Committee (1948-49), which recommended a comprehensive plan for the provision of water supply and sanitation so as to cover 90 per cent of the population within a period of 40 years. In 1954, the Union Health Ministry announced the national water supply and sanitation progrmme as part of its health schemes and made specific provision to assist the states in the implementation of urban and rural water and sanitation schemes. In the third five-year plan period the village water supply programme was launched and this programme was under taken at block level through Village Panchayat or Gram Panchayat and Panchayat Samities. During the three annual plans (1966-69), new schemes were taken up. Water and sanitation was also part of the community development, local development and welfare of the backward class programmes.

During the fourth five-year plan period, the government of India introduced Accelerated Rural Water Supply Scheme Programme in the year 1972-73 (details explained in section C) and Minimum Needs Programmes (MNP) was introduced as part of the 20 point programme of the country in the fifth five-year plan period. These two programmes have (ARWPS and MNP) helped to take important steps in the rural water supply and sanitation

programmes. The period 1981 to 1990 had been designated as the international drinking water supply and sanitation decade. India being a signatory to this resolution had pledged full support for drinking water supply and sanitation. In the eighth plan period the stipulated norm of supply was 40 lpcd of safe drinking water within a walking distance of 1.6 km. And during the ninth plan, the Total Sanitation Campaign (TSC) scheme was introduced. During the Tenth Plan period Swajaldhara Scheme was launched (2002) by adopting demand responsive strategy and also for institutionalising community participation for the sustainability of drinking water supply systems and sources in rural areas. Further consultations were held as part of a continuous exercise to hasten the process of adoption of the sector reforms, with the State Governments, Non-Government Organizations (NGOs) and the External Support Agencies resulting in extreme need for convergence, promotion of social mobilisation and capacity development of the community in rural water supply and sanitation. Recent programmes suggest the prominence of Panchayat Raj Institutions at the District and the Gram Panchayat levels in the provision of water supply and sanitation services.

4.2a. Status of Rural Water Supply in India

Water, an absolute necessity of life, can also prove to be a carrier of suffering and death if not properly treated and supplied in adequate quantity. The World Health Organization (WHO) says 1.1 billion people or 18 per cent of the world's population, lack access to safe drinking water (The Hindu: Oct-26-2008: 4). In India, 2001 Census reported that only 68.2 per cent of households were having safe drinking water. About 25 per cent of the populations in rural areas do not have access to an adequate and safe supply of drinking water in India (Saleth and Sastry, 2004). Another study reveals that about 94 per cent of the rural population and 91 per cent of the people living in urban areas respectively have access to safe drinking water (Khurana and Sen, 2005).

Table 4.1: Coverage of Habitations under Rural Water Supply in India

Year	NC	PC	FC	Total
2004	0.39	4.59	95.02	100
2005	0.32	3.55	96.13	100
2006	0.21	2.73	97.05	100

Source: Various year Economic Surveys, Government of India
Note: NC: Not Covered Habitations; PC: Partially Covered Habitations:
FC: Fully Covered Habitations

As shown in above table 4.1 coverage of habitations under rural water supply has been increasing over the years. About 95 per cent of the habitations have been fully covered by rural water supply in India during 2004 to 2006 and only 3 per cent habitations are yet to be covered under water supply scheme.

Table 4.2: State Wise Coverage of Habitations under Rural Water Supply (As on April 1, 2006) (in Per cent)

States	NC	PC	FC	Total
Andhra Pradesh	0.00	0.00	100.00	100.00
Assam	0.20	6.81	92.99	100.00
Bihar	0.00	0.00	100.00	100.00
Gujarat	0.00	0.00	100.00	100.00
Haryana	0.00	0.00	100.00	100.00
Karnataka	0.00	6.16	93.84	100.00
Kerala	0.00	60.14	39.86	100.00
Madhya Pradesh	0.00	0.00	100.00	100.00
Maharashtra	0.28	18.15	81.57	100.00
Orissa	0.00	0.00	100.00	100.00
Punjab	0.72	4.41	94.87	100.00
Rajasthan	2.00	0.00	98.00	100.00
Tamil Nadu	0.00	0.00	100.00	100.00
Uttar Pradesh	0.00	0.00	100.00	100.00
West Bengal	0.00	0.00	100.00	100.00
India	0.21	2.73	97.05	100.00

Source: Indiastat.com accessed on 17/1/2008

Table 4.2 shows that of 14,22,283 rural habitations in the country, 13,80,337 (97.05 per cent) rural habitations are fully covered (FC), 38894 (2.73 per cent) habitations are partially covered (PC) and 3052 (0.21 per cent) are not covered (NC) as noted in the year 2006. It means around 3052 rural habitations are without any safe drinking water supply available within reasonable distance. It is important to note that coverage is also not uniform across the country and varies widely from state to state. For instance, table 4.2 shows that out of 15 major states in India, only nine have achieved full coverage of rural habitation by water supply.

4.2b. Status of Water Quality Affected Habitation in India

Water quality in the rural drinking water supply has emerged as a major issue. The World Health Organization says that water related disease account for 80 per cent of illness and deaths in developing countries (The Hindu: Oct-26-2008: 4). But the most serious malfunction in India's water supply system is its hazardous quality and gigantic cost to human health. India ranks 120th out of 122 countries in potable water quality (Acharya: 2008). It has been estimated that around 37.7 million Indians are affected by waterborne diseases annually, 1.5 million children are estimated to die of diarrhea alone and 73 million working days are lost due to waterborne disease each year (Khurana. and Sen: 2005: 2). There was no proper emphasis on water quality till the end of the tenth five-year plan period. Rural drinking water supply is, to a large extent, dependent on ground water (85 per cent)[IV]. Although ground water is less susceptible to pollution, the quality problem in ground water is inherent in the form of contamination caused by the very geological formation, viz excess fluoride, arsenic, brackishness, iron etc. Inadequate recharging also aggravates the problem of chemical contamination. In order to provide focused attention on tackling water quality problems, 20 per cent of the ARWSP funds have been retained at the Center, which gets released to water quality affected states. National Rural Drinking Water Quality Monitoring and Surveillance

[IV] Department of Drinking Water Supply, Annul Report 2007-08

Programme have been launched in the country in February 2006 to provide safe drinking water in rural areas. Table 4.3 shows state wise quality affected rural habitation, during 2006-07. About 195813 (13.77) rural habitations have been affected with water quality problems in India. The problem is seen in states like Assam, Bihar, Karnataka, Orissa, Rajasthan and West Bengal. Andhra Pradesh, Haryana, Kerala, Madhya Pradesh, Tamil Nadu, and Uttar Pradesh have safe drinking water supply to their habitations as compared to other states.

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Table 4.3: Quality Affected Rural Habitations in the Year 2006-07

State	Quality Affected Habitations	Total Habitations	Percentage of Affected Habitations
Andhra Pradesh	2555	69732	3.66
Assam	28181	70555	39.94
Bihar	24717	105340	23.46
Gujarat	4929	30269	16.28
Haryana	336	6745	4.98
Karnataka	20170	56682	35.58
Kerala	867	9763	8.88
Madhya Pradesh	3852	109489	3.52
Maharashtra	11215	85930	13.05
Orissa	28016	114099	24.55
Punjab	2041	13449	15.18
Rajasthan	31883	93946	33.94
Tamil Nadu	1420	66631	2.13
Uttar Pradesh	6377	243508	2.62
West Bengal	18767	79036	23.74
India	195813	1422283	13.77

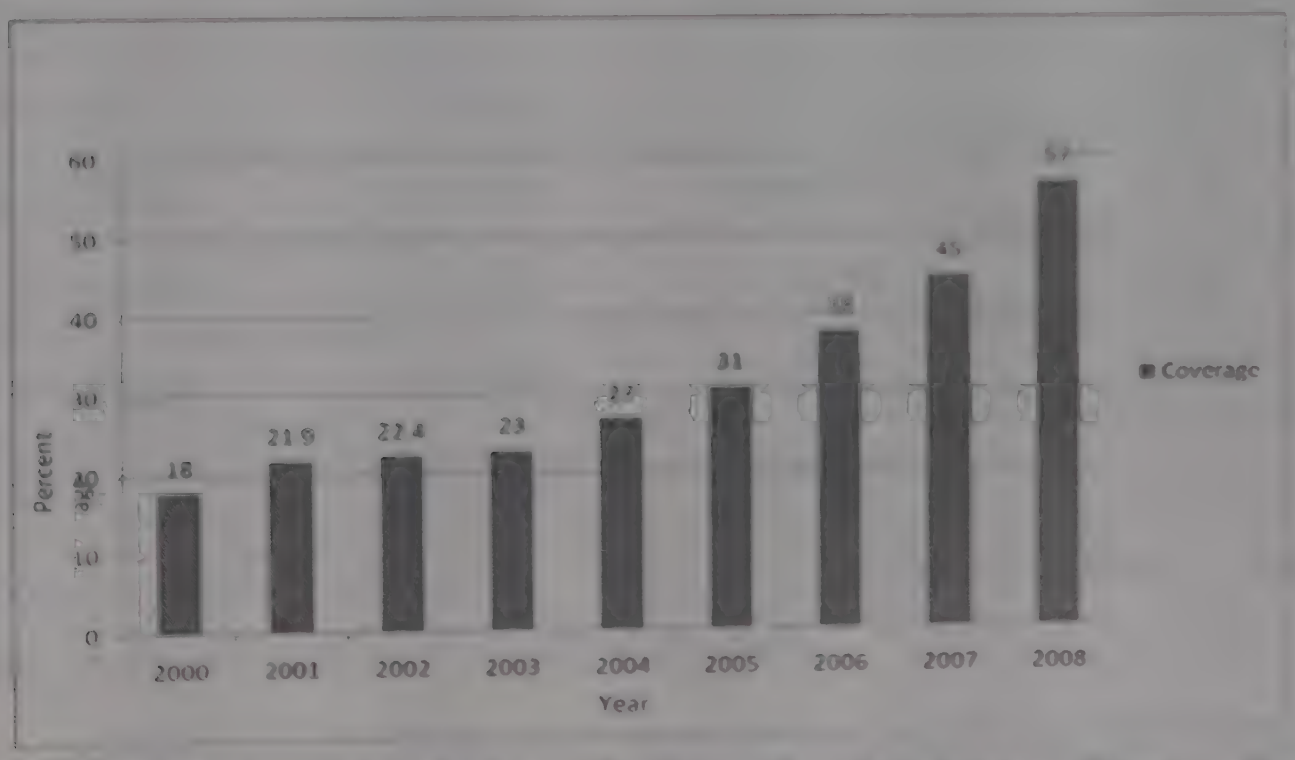
Source: Govt. of India, Dept. of Drinking Water Supply

http://www.ddws.gov.in Accessed 7-Jan-2009

4.2c.Status of Rural Sanitation in India

Sanitation is one of the major indices of the quality of life. But, we find that there is a huge gap between the provision of drinking water supply and sanitation facilities. According to World Health Organization 2.6 billion people or 42 per cent of the world's population, lack access to basic sanitation (The Hindu: Oct-26-2008: 4). Recently, the third South Asia Conference highlighted the issue that, two of every three among South Asia's 1.5 billion people lack access to appropriate sanitation (SACOSAN III: 2008). However in India, as per the NSSO (1988-89) 10.96 per cent in the 44th round and 17 per cent of rural households in 54th round (1998-99) were having latrine facility. According to the 2001 Census, 21.9 per cent of the rural families had access to toilets. Figure 4.1 shows that individual household latrine coverage has more than doubled, from 21.9 per cent to 57 per cent in 2008. It has rapidly increased in the last three years (2006-2008) and about 43 per cent of households still need to be covered.

Figure -4.1 : Coverage of Rural Sanitation in India



Source: Govt. of India, Dept. of Drinking Water Supply http://www.ddws.gov.in. Accessed; 7-Jan-2009

Table 4.4: Status of Household Sanitation Coverage in Major States of India during 2003

State	With Toilets	Total Households	Percentage Coverage
Andhra Pradesh	4825672	13552795	35.61
Assam	491268	3470159	14.16
Bihar	615876	9234254	6.67
Gujarat	1735941	6245533	27.79
Haryana	393643	2029538	19.40
Karnataka	1528694	6889849	22.19
Kerala	3476538	4408412	78.86
Madhya Pradesh	836162	8635759	9.68
Maharashtra	2156437	11053429	19.51
Orissa	300858	6850561	4.39
Punjab	663317	1844360	35.96
Rajasthan	1065629	7932996	13.43
Tamil Nadu	2623573	8991930	29.18
Uttar Pradesh	4772628	23528086	20.28
West Bengal	4113065	12462572	33.00
India	31093627	138145234	22.51

Source: Govt. of India, Dept. of Drinking Water Supply http://www.ddws.gov.in. Accessed: 7-Jan-2009

Table 4.4 depicts state wise coverage of household sanitation in India. In the year 2003 the household sanitation coverage of India was 22.51 per cent but, there was large variation among the major states. The states like Orissa, Bihar, Madhya Pradesh, Rajasthan, Assam, Haryana, Maharatsra, Uttar Pradesh

and Karnataka are behind the national level. On the other hand Gujarat, Tamil Nadu, West Bengal, Andhra Pradesh, Punjab and Kerala are ahead of the national level household sanitation coverage. Kerala had the highest household sanitation coverage at 78.86 per cent and Orissa had lowest household sanitation coverage at 4.39 among all states in India.

In addition to individual toilets, the Total Sanitation Scheme (TSC) lays emphasis on school sanitation. Since inception, a total of 6.80,000 school toilets have been constructed towards a target of 11.80,000. Table 4.5 presents year wise physical progress of school sanitation in India from 2001 to 2007. The total latrine at the school has increased by more than 23 times. The number of latrines at the schools was 10,210 in the year 2001 and it increased to 2,38,234 latrines in the year 2007.

Table 4.5: Physical Progress of School Sanitation in India

Year	Coverage
2001	10210
2002	11197
2003	66229
2004	55226
2005	88092
2006	131937
2007	238234

Source: Govt. of India, Dept. of Drinking Water Supply http://www.ddws.nic.co.in. Accessed: 7-Jan-2009

Table 4.6 shows the status of school sanitation of the major states in India. During the year 2003 the national level coverage of school sanitation was 43.12 per cent. States like Orissa, Bihar, Assam, Madhya Pradesh, Maharashtra, Andhra Pradesh and West Bengal have low school sanitation coverage compared to national level. On the other hand states like Tamil Nadu, Rajasthan, Gujarat, Karnataka, Kerala, Uttar Pradesh, Punjab, and Haryana

have more than national level coverage of school sanitation. The coverage of school sanitation is highest in Haryana and lowest in Orissa among the all major states.

Table 4.6: Status of School Sanitation Coverage in Major States, India during 2003

State	No. of Schools	With Toilets	%age Coverage
Andhra Pradesh	79654	30803	38.68
Assam	32909	8034	24.41
Bihar	30888	7118	23.07
Gujarat	31502	16863	53.53
Haryana	6393	6200	97.29
Karnataka	52307	27007	53.82
Kerala	7461	4342	58.23
Madhya Pradesh	91444	22906	25.05
Maharashtra	63602	23748	37.34
Orissa	39265	7861	20.02
Punjab	14079	9795	79.23
Rajasthan	63623	33526	53.44
Tamil Nadu	50257	22207	44.19
Uttar Pradesh	145533	97930	69.56
West Bengal	53143	21994	41.82
India	871686	370613	43.12

Source: Govt. of India, Dept. of Drinking Water Supply http:///www.ddws.nic.co.in. Accessed; 26-Feb-2009

4.3: Rural Water Supply and Sanitation in Five-Year Plan Periods in India

Prior to independence, the progress in the field of rural water supply and sanitation was slow and sporadic in India. Since independence the problem of drinking water supply and sanitation has received some serious attention. Soon after independence the government established the Environmental Hygiene Committee in 1948-49, which recommended preparation of compressive plan for water supply and sanitation, so as to cover 90 per cent of the population in the next 40 years. Water supply and sanitation were added to the national agenda during the first five-year planning period (1951-1956). Table 4.7 reveals that expenditure on rural water supply and sanitation in five-year plan periods has rapidly increased. The first five year plan period was characterized by relatively negligible investments (only 12.24 per cent of total WSS expenditure) in rural water supply and sanitation. Since the beginning of the Sixth Five-Year Plan (1980-85) and the launch of the International Drinking Water Supply and Sanitation Decade, India has substantially increased its commitment to the water supply and sanitation sector. The Ninth Plan provided Rs. 3953800 lakh for Water Supply and Sanitation Sector, which works out to about 4.6 per cent of the Ninth Plan Public Sector Outlay and is an all time high, over the various Plan periods, although there were some shifts in the ratio of WSS to RWSS. Up to the Fifth Plan (1974-1979), investments in RWSS were lower even though the minimum needs programme was introduced as part of the 20 point programme of the country during the fifth plan and MNPs approach to water and sanitation was narrow and focused on the public health needs. This changed since the Annual Plan of 1979-80, and the focus of RWSS sector was on increasing investments. During the Ninth Plan the gap further narrowed as Total Sanitation Campaign (TSC) scheme was introduced in this period. India has witnessed rapid demographic changes in the last decade. While the population grew by over 21 per cent, plan allocations to the water supply and sanitation sector during the same period increased by barely one and half per cent. This of course, shows the operational reality of resource constraints.

Table 4.7: Financing of Water Supply and Sanitation during the Five Year Plan Periods (Rs in Lakh)

Plan Period	Total Expenditure on Water Supply and Sanitation Sector	Expenditure on Rural Water Supply and Sanitation	Share of RWSS Expenditure to total expenditure of WSSS in per cent
First Plan (1951-56)	4900	600	12.24
Second Plan (1956-61)	7200	2800	38.89
Third Plan (1961-66)	10570	1633	15.23
Three Annul Plans (1966-69)	10642	NA	NA
Fourth Plan (1969-74)	43700	15500	35.47
Fifth Plan (1974-79)	103068	48124	46.69
Annul Plan (1979-80)	43022	23229	54.00
Sixth Plan (1980-85)	404700	228032	56.34
Seventh Plan (1985-90)	652247	355672	54.53
Two Annul Plans (1990-92)	442729	270592	61.12
Eighth Plan (1992-97)	1671103	1072879	64.20
Ninth Plan (1997-2002)	3953800	2091400	52.90
Tenth Plan (2002-07)	4420655	2444800	55.30

Source: Indiastat.com accessed on 10/1/2009

4.4: Financing of Rural Water Supply and Sanitation in India

4.4a. Share of Expenditure on Rural Development and RWSS

Water supply and sanitation are basic infrastructure in rural areas. In 1999, Department of Drinking Water Supply was formed under the Ministry of Rural Development (MRD) to give emphasis on rural water supply as well as on sanitation. The amount of funds spent on rural development and rural water supply and sanitation sector are indicated in table 4.8. India has been spending less than 30 per cent on rural water supply and sanitation in total rural development.

Table 4.8: Financing of the Rural Development and RWSS (Rs in Lakh)

Year	Rural development	Rural water supply and sanitation	RWSS Expenditure (% share in expenditure of rural development)
2001-02	NA	216000	-
2002-03	NA	240000	-
2003-04	1027000	275000	26.78
2004-05	1143700	330000	28.85
2005-06	1833400	475000	25.91
2006-07	2402500	600000	24.97
2007-08	2752286	756174	27.47

Source: Ministry of Rural Development (GOI) Accessed on 10/1/2009

4.4b. Financing of Water Supply and Sanitation (Central and State Government)

The central government allocates funds and also ensures that funds are provided in State budgets. Table 4.9 shows central and state government financing on water supply and sanitation in India. States have given lot of emphasis for provision of water supply and sanitation during the years 1991-2006. The percentage of state expenditure in the financing of water and sanitation is more than 87 per cent, while that of central government is less than 13 per cent during the year 1991-2006.

Table 4.9: Financing of Water and Sanitation in India (Rs in Lakh)

Year	Central Govt.	State Govt.	Total Central & State	Central Govt. (% share in total exp of Central & State Govts)	State Govt. (% share in total exp of Central & State Govts)
1991-92	6400	234400	240800	2.66	97.34
1992-93	6700	264400	271100	2.47	97.53
1993-94	10200	310100	320300	3.18	96.82
1994-95	11400	387400	398800	2.86	97.14
1995-96	40600	403700	444300	9.14	90.86
1996-97	35200	469400	504600	6.98	93.02
1997-98	52100	569100	621200	8.39	91.61
1998-99	60600	696600	757200	8.00	92.00
1998-00	67600	723000	790600	8.55	91.45
2000-01	81500	853200	934700	8.72	91.28
2001-02	86000	826500	912500	9.42	90.58
2002-03	97900	1016300	1114200	8.79	91.21
2003-04	121900	1123400	1245300	9.79	90.21
2004-05	178800	1244500	1423300	12.56	87.44
2005-06	212100	1613600	1825700	11.62	88.38
2006-07	245100	1701900	1947000	12.59	87.41

Source: Centre for Monitoring Indian Economy (CMIE). November 2006: pp 42

4.4c Share of Expenditure on Rural Water Supply and Sanitation

The rural water supply and sanitation sector gradually emerged in the two decades prior to the 1980s' International Drinking Water Supply and Sanitation Decade (IDWSSD). Government of India also implemented programmes like Accelerated Rural Water Supply Programme (ARWSP), Swajaldhara and Total Sanitation Campaign to give priority to rural water supply and sanitation in rural areas. More than 66 per cent of the population live in rural India but, government spends less than 30 per cent for rural water supply and sanitation (see Table 4.10).

Table 4.10: Share of Rural Water Supply and Sanitation Expenditure (In Rs)

Year	Water Supply and Sanitation (WSS)	Rural Water Supply and Sanitation (RWSS)	RWS (%share in WSS)
2001-02	912500	216000	23.67
2002-03	1114200	240000	21.54
2003-04	1245300	275000	22.08
2004-05	1423300	330000	23.19
2005-06	1825700	475000	26.02
2006-07	1947000	600000	30.82

Source: Centre for Monitoring Indian Economy and Ministry of Rural Development (GOI); Nov 2006.

4.4c. Financing of Rural Water Supply in India

Water today is perceived by the rural public as a social right. to be provided free by the Government. rather than as a scarce resource which must be managed locally as a socio-economic good in order to ensure its effective use. Rural water supply is a State subject and States have been taking up projects and schemes for the provision of safe drinking water from their own

resources (Economic Survey, 2006-07:224). However, recognising the importance of providing safe drinking water in rural habitations, Government of India has been providing financial assistance to State Governments. In India, major programmes have been implemented by government agencies including Central, State, difference agencies at local levels (see appendix 4.1) and donor agencies, etc. To achieve the objective of providing safe drinking water in all rural habitations, programmes like Accelerated Rural Water Supply Programme (ARWSP), Pradhan Mantri Gramodaya Yojana – Rural Water Supply (PMGY- RDW), Swajaldhara, etc., have been initiated.

The Gram Panchayats play a major role in providing safe drinking water and managing the systems and sources in their respective areas. They are involved in the implementation of schemes, particularly in selecting the location of hand pumps, stand posts and spot sources, in operation and maintenance, etc. Moreover, Government of India emphasizes on empowering and on capacity building of the Panchayat Raj Institutes (PRI) to enable them in discharging their responsibilities in drinking water supply. State government spends more than 90 per cent on overall water supply and sanitation (see Table 4. 9). Table 4.11 depicts the share of Central and State government spending on rural water supply; it clearly reveals that central and state administrations provide relatively equal funding on rural water supply schemes. even though there is disparity which exists across major states.

Table 4.11: Central and State Government Financing on Rural Water Supply

State	2001-02		2004-05		2005-06	
	Central	State	Central	State	Central	State
Andhra Pradesh	50.64	49.36	39.08	60.92	59.05	40.95
Assam	49.67	50.33	64.37	35.63	69.82	30.18
Bihar	32.98	67.02	63.58	36.42	69.27	30.73
Gujarat	43.97	56.03	37.44	62.56	46.91	53.09
Haryana	33.94	66.06	21.60	78.40	10.26	89.74
Karnataka	48.79	51.21	54.97	45.03	61.94	38.06
Kerala	49.24	50.76	45.40	54.60	47.02	52.98
Madhya Pradesh	38.80	61.20	51.36	48.64	50.08	49.92
Maharashtra	66.63	33.37	26.78	73.22	73.52	26.48
Orissa	54.89	45.11	48.34	51.66	72.06	27.94
Punjab	24.60	75.40	26.16	73.84	11.76	88.24
Rajasthan	60.05	39.95	54.35	45.65	54.06	45.94
Tamil Nadu	18.82	81.18	14.18	85.82	20.37	79.63
Uttar Pradesh	25.90	74.10	33.48	66.52	40.19	59.81
West Bengal	54.05	45.95	50.04	49.96	58.23	41.77
India	**43.82**	**56.18**	**39.68**	**60.32**	**47.11**	**52.89**

Source: Centre for Monitoring Indian Economy and Ministry of Rural Development (GOI); Nov 2006.

Table 4.12 presents share of rural water supply expenditure in major states in rural India. At national level share of expenditure on rural water supply was 16.38 per cent. It clearly shows that during 2003-04, government spent very less on rural water supply. The states like Andhra Pradesh, Assam, Karnataka, Kerala, Madhya Pradesh, Orissa, Rajasthan, and West Bengal spend comparatively higher than all Indian average on rural water supply. On the other hand, the states like Bihar, Gujarat, Haryana, Maharashtra, Punjab, Tamil Nadu, and Uttar Pradesh have spent less than the all India level expenditure on rural water supply in the year 2003-04.

Table 4.12: State-wise Expenditure on Water Supply

States	2003-04		
	TWS	RWS	Percentage Share in RWS
Andhra Pradesh	63100	20432	32.38
Assam	21800	5852	26.84
Bihar	30400	2487	8.18
Gujarat	60600	9817	16.20
Haryana	55000	2891	5.26
Karnataka	65900	16047	24.35
Kerala	24700	5244	21.23
Madhya Pradesh	53500	9923	18.55
Maharashtra	126300	15469	12.25
Orissa	28300	5354	18.92
Punjab	24900	2305	9.26
Rajasthan	144400	26190	18.14
Tamil Nadu	88500	8930	10.09
Uttar Pradesh	91100	11970	13.14
West Bengal	35600	8470	23.79
India	**1189700**	**194911**	**16.38**

Source: Centre for Monitoring Indian Economy and Ministry of Rural Development (GOI); Nov 2006.

4.5: Government Programmes on Rural Water Supply

4.5a Accelerated Rural Water Supply Programme (ARWSP)

Government of India's major intervention in rural water sector started in 1972-73 through Accelerated Rural Water Supply Programme (ARWSP) for assisting States and Union Territories (UTs) to accelerate the coverage of drinking water supply. ARWSP is currently being implemented through the Rajiv Gandhi National Drinking Water Mission.

The objectives of Accelerated Rural Water Supply Programmes (Economic Survey, 2007-08: 224) are to cover all rural habitations and especially to reach the un-reached with an access to safe drinking water, ensure sustainability of the systems and sources, tackle the problems of water quality in affected habitations and institutionalise the sector reform initiative in rural water supply sector.

Funding pattern of Accelerated Rural Water Supply Programme (MRD, GOI, 1998)[v]: Under ARWSP, funds are provided to States for making provision of safe drinking water in rural habitations. State Governments should make matching contribution: (a.) Upto 20 per cent of the funds can be utilised by the State Governments to take up projects under the Sub-Mission programme to tackle water quality problems like fluorosis, arsenic, brackishness, etc, and to ensure source sustainability by conserving water, recharging aquifers, etc. (b.) 25 per cent of this 20 per cent should be utilised on the sub-mission relating to sustainability of sources. (c.) 20 per cent of the annual outlay of ARWSP has been earmarked for implementation of sector reform projects. (d.) Further, 15 per cent of the funds released can be spent on operation and maintenance (O&M) of the existing systems and sources. (e.) About 5 per cent of the annual allocation is also earmarked to States covered by Desert Development Programme (DDP) under ARWSP.

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[v] For instance, see the website, http://rural.nic.in/anual0203/chap-25.pdf

Table 4.13: Expenditure on Rural Water Supply under the ARWSP in 2007-08 (Rs in lakh)

State	Central Govt.	State Govt.	Total C&S	Central Govt. (% share in total exp of C&S Govts.)	State Govt. (% share in total exp of C&S Govts.)
Andhra Pradesh	38841	2417	41257	94.14	5.86
Assam	10139	5796	15935	63.63	36.37
Bihar	7373	7001	14374	51.29	48.71
Gujarat	19050	65883	84933	22.43	77.57
Haryana	10520	38248	48768	21.57	78.43
Karnataka	25310	26493	51803	48.86	51.14
Kerala	6918	28016	34934	19.80	80.20
Madhya Pradesh	26756	24623	51379	52.07	47.93
Maharashtra	36716	17121	53837	68.20	31.80
Orissa	14485	9304	23788	60.89	39.11
Punjab	3251	1421	4672	69.58	30.42
Rajasthan	32181	29594	61775	52.09	47.91
Tamil Nadu	19418	46738	66156	29.35	70.65
Uttar Pradesh	19804	14884	34688	57.09	42.91
West Bengal	18550	27504	46054	40.28	59.72
India	**364499**	**406608**	**771106**	**47.27**	**52.73**

Source: Govt. of India, Dept. of Drinking Water Supply http://ddws.nic.in Accessed 7-Jan-2009

Table 4.13 depicts expenditure on rural water supply under the ARWSP in 2007-08. The States share on rural water supply was higher (52.73 per cent) compared to Central Government expenditure (47.27) on rural water supply under ARWSP at national level. States like Andhra Pradesh, Assam, Bihar, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan and Uttar Pradesh have higher share of Central Government's expenditure on rural water

supply than national average,but, lower share of State Government expenditure than the national level. In states like Gujarat, Haryana, Kerala, Tamil Nadu, and West Bengal although the central government expenditure on rural water supply is lower than the national average, share of State Government on rural water supply is higher than all Indian average.

4.5b. Swajaldhara

The Government of India has been emphasizing the need for taking up community based rural water supply programmes, and now has decided to open up the reform initiatives in the rural drinking water supply sector throughout the country. The Swajaldhara scheme was launched in 25th December 2002. The objectives of the Swajaldhara programme include empowering the rural community, particularly the women, and enabling them to participate in the planning, implementation and operation of water management programmes, redefining the role of government agencies from providers to facilitators, enabling project village communities to have at least 40 liters per capita per day of safe drinking water, establishment of water harvesting structures, revival of traditional drinking water source with partial capital cost sharing and transfer complete responsibility of operation and maintenance to the community involved.

Swajaldhara has some key components (WASMO, 2004)[VI] implemented at habitation level, which includes IEC, capacity development, institution building such as Village Water and Sanitation Committee (VWSC) as part of the Gram Panchayat and community participation, water quality control, sustainability of sources , operation and maintenance (O&M), etc.

[VI] For instance, see the website, http://www.wasmo.org/eng/swajaldhara.shtm. Accessed 4th June 2008.

The state government has constituted District Water and Sanitation Mission (DWSM) at district level for implementation of Swajaldhara programme in the district. The District water and sanitation (steering) committee headed by Chief Executive Officer of Zilla Panchayat/Chief Development Officer assist the project planning and implementation of District Water and Sanitation Mission. Gram Panchayats is responsible entirely for undertaking planning, water supply and sanitation schemes as well as the software components of the project with the help of NGOs. Water and sanitation user groups in each revenue village act as operators of the scheme by undertaking operation and maintenance and billing and collection. The concerned district steering committee selects the villages and NGOs.

The funding pattern of Swajaldhara proposals will be approved and sanctioned only, if the proposals are found to have the commitment of the concerned District Implementing Agency, and the State Government for compliance of reform principles and if 10 per cent of the estimated capital cost of the schemes (5 per cent in case of predominantly SC/ST habitations) is paid by the community, in cash up front, as their contribution. The cost of the project excluding community contribution will be fully met by the Government of India. In Swajaldhara scheme the Gram Panchayat must also be willing to take up the complete operation and maintenance responsibility once the scheme is completed. The local Member of Parliament can bridge the shortfall by contributing from MPLAD programme, if there is genuine problem in mobilizing community contribution for providing drinking water in some schools. However, it should not be a general practice to provide 10 per cent from MPLAD fund to access Swajaldhara funds.

Table 4.14: Financing of Rural Water Supply under Swajaldhara

State	2002-03	2003-04	2004-05	2005-06	2006-07	Total Expenditure on RWS during 2002-07
Andhra Pradesh	6332	1178	1146	2368	1439	12463
Assam	753	532	114	303		1702
Bihar			11	12		23
Gujarat	151	1141	1971	2020	2944	8227
Haryana	11	487	18	41		557
Karnataka	229	1431	746	1630	449	4485
Kerala	383	367	177	280	279	1486
Madhya Pradesh	429	584	1119	1052	1	3185
Maharashtra	7093	1948	1729	3035	3	13808
Orissa	580	590	722	1218	75	3185
Punjab		276	327	393		996
Rajasthan	255	1316	891	2090	1408	5960
Tamil Nadu	1445	1140	1475	2458	61	6579
Uttar Pradesh	910	998	947	1033	12	3900
West Bengal	3	379	6	534		922
India	**19387**	**14149**	**13125**	**21184**	**7971**	**75816**

Source: Govt. of India, Dept. of Drinking Water Supply http:/ddws.nic.in. Accessed; 7-Jan-2009

Table 4.14 presents state wise financing of rural water supply under the Swajaldhara programme during 2002 to 2007. States like Bihar, Haryana, West Bengal and Punjab have spent less on rural water supply under the Swajadhara programme while states like Gujarat, Andhara Pradesh and Maharastra have spent more than other states under the Swajaladhara scheme.

4.5c. Bharat Nirman Programme

The Bharat Nirman programme was launched in the fiscal year 2005-06, which is one of major programme of UPA government. Bharat Nirman is a time- bound plan for action in rural infrastructure. The six areas covered under this plan are rural electrification, rural water supply, rural housing, roads, telephone connectivity and irrigation. The rural water supply is one of the main components in this scheme. The main objective of Bharat Nirman are to cover every habitation (uncover) by 2009 and to provide quality water to rural people. The Department of Drinking Water Supply in Ministry of Rural Development is responsible for meeting this goal in partnership with state governments. The programme instrument is funded on 50 per cent sharing basis between the government of India and state governments.

Table 4.15 presents, the expenditure on RWS under the Bharat Nirman Programme. Actual expenditure in relation to budget provision has been decreasing in the years.

Table 4.15: Financing on RWS under Bharat Nirman Programme (Rs in Lakh)

Year	Budget Provision	Expenditure	% Expenditure
2005-06	405000	409800	101.49
2006-07	520000	456000	87.69
2007-08	650000	644169	99.10
2008-09	730000	500352	68.54

Source: Department of Drinking Water Supply, 2008-09

4.6: Rural Sanitation Programmes in India

Local government bodies are responsible for provision of sanitation facility in the country (municipalities or corporations in urban areas and Gram Panchayats in rural areas). Proper sanitation is important not only from the general health point of view but it has a vital role to play in our individual and social life too. Sanitation is one of the basic determinants of quality of life and human well being. Good sanitary practices prevent contamination of water and soil and thereby prevent diseases. High infant mortality rates are also largely attributed to the poor sanitation. The concept of sanitation was, therefore, expanded to include personal hygiene, home sanitation, safe water, garbage disposal, excreta disposal and waste water disposal. With this motive, the Government of India implemented sanitation programmes like Total Sanitation Campaign (TSC), Nirmala Grama Yojana, and Swacha Grama Scheme, etc.

4.6a Total Sanitation Campaign (TSC)

In the TSC programme, the State and Central Governments act as facilitators, through enabling policies, budgetary support and capacity development (SACOSAN III, 2008). In 1999 Central Rural Sanitation Programme was restructured when Total Sanitation Campaign (TSC) was introduced. The Total Sanitation Campaign envisages a synergized interaction between the government, people and active NGOs. The social workers are also trained to conduct sanitation campaign (Samanta and Gupta: 2005:6). The other characteristics of the scheme are intensive IEC campaigns, provision of an alternative delivery system and more flexible and demand oriented construction norms for increasing the awareness among the rural people and generation of demand for sanitary facilities. Implementation of scheme is oriented towards satisfying the felt-needs, wherein individual households choose from a menu of options for their household latrines. The aim is also to provide separate urinals/toilets for boys and girls in all the schools/ anganawadis in rural areas in the country.

The main objectives of the Total Sanitation Campaign are as under:

a. To bring improvement in the general quality of life in the rural areas and accelerate sanitation coverage in rural areas through access to toilets to all by 2012.

b. To motivate communities and Panchayat Raj Institutions promoting sustainable sanitation facilities through awareness creation and health education in rural areas and cover schools by March 2008 and anganawadis by March 2009, with sanitation facilities and promote hygiene education and sanitary habits among students.

The financing pattern including the incentive for BPL household for construction of individual household latrine includes Central Government, State Government and individual households' with a cost sharing ratio of 60:20:20. TSC has made provision for toilet facility and education on hygiene in all types of government rural schools i.e. primary, upper primary, secondary and higher secondary schools with emphasis on toilets for girls. Central Government, State Government and Parent Teachers GP share the cost in the ratio of 60:30:10.

Table 4.16: Financing on Rural Sanitation under TSC in the Year 2007-08 (in per cent)

State	Center	State	Beneficiaries	Total
Andhra Pradesh	43.23	39.82	16.95	100.00
Assam	73.25	17.82	8.93	100.00
Bihar	71.39	22.31	6.30	100.00
Gujarat	61.57	26.37	12.06	100.00
Haryana	55.83	24.96	19.21	100.00
Karnataka	54.90	29.70	15.40	100.00
Kerala	46.87	21.10	32.03	100.00
Madhya Pradesh	63.19	23.43	13.38	100.00
Maharashtra	62.67	27.72	9.61	100.00
Orissa	65.00	22.15	12.84	100.00
Punjab	77.43	11.06	11.51	100.00
Rajasthan	68.24	25.38	6.38	100.00
Tamil Nadu	55.38	25.34	19.28	100.00
Uttar Pradesh	48.09	38.96	12.95	100.00
West Bengal	37.78	13.73	48.48	100.00
India	**54.46**	**29.43**	**16.11**	**100.00**

Source: Govt. of India, Dept. of Drinking Water Supply http: ddws.nic.in. Accessed; 7-Jan-2009

Table 4.16 shows share of financing under TSC from different sectors. In the year 2007-08, the share of central, state and beneficiaries was 54.46 per cent, 29.3 per cent and 16.11 per cent respectively as against TSC norms of 60:30:10 in India. The share of Central Government in States like Assam, Bihar, Gujarat, Madhya Pradesh, Maharashtra, Orissa, Punjab, and Rajasthan is higher than national level but, lower than State Government share. States like Andhra Pradesh, Haryana, Karnataka, Kerala, Tamil Nadu, Uttar Pradesh and West Bengal have lower central share than all India level, while higher shares in state government expenditure. An interesting thing is that, in states like Kerala and West Bengal beneficiaries' share was far higher on sanitation

compared to other major states. This shows the concern of the people for hygiene in these States.

Table 4.17: Utilised of Funds under TSC in the Year 2007-08 (Rs in Lakh)

State	Allocation	Percentage of Utilisation
Andhra Pradesh	71550.67	79.58
Assam	10166.86	56.43
Bihar	37774.11	56.22
Gujarat	31209.32	71.16
Haryana	16127.21	60.35
Karnataka	27591.02	61.77
Kerala	17954.40	65.37
Madhya Pradesh	46088.62	65.76
Maharashtra	47941.90	72.51
Orissa	37502.20	67.33
Punjab	2011.89	22.26
Rajasthan	19528.05	69.05
Tamil Nadu	49690.23	85.11
Uttar Pradesh	172640.75	66.53
West Bengal	47228.42	73.47
India	**708635.62**	**69.12**

Source: Govt. of India, Dept. of Drinking Water Supply http:/ddws.nic.in. Accessed; 7-Jan-2009

Table 4.17 shows allocation and utilisation of funds under TSC. During 2007-08, about 69.12% (708635.62 lakh) was utilised at the national level. In states like Andhra Pradesh, Gujarat, Maharashtra, Tamil Nadu, and West Bengal utilisation was found to be more than national level.

4.7: Conclusion

Provision of drinking water supply and extension of sanitation facilities to rural poor are the main components of the activities of Department of Drinking Water Supply. The achievements in water supply and sanitation depends on central financing for these schemes with surveillance commitments from States. NGOs too need to get involved (Acharya: 2008). India has made a radical policy shift from a target driven approach to rural water supply and sanitation. Hence, there is an increase in the number of people covered by drinking water in rural areas which is a notable achievement and reflection of the significant investments by the Government of India (GoI) over the last decade even though the quality of drinking water supply and sanitation service is not satisfactory in rural India. The causes for the delayed progress in water supply as well as sanitation sectors are several and quite obvious. The Government of India has faced many difficulties for fulfilling the objective of rural drinking water and sanitation. The major constraints include finance, lack of planning and awareness and maintenance from Gram Panchayats. Secondly existing polices have not been appropriately translated into action programmes. Thirdly the rural water supply and sanitation programmes so far have been more localized in public health engineering works rather than multi-sectoral strategy oriented. Poor rural sanitation coverage is explained by a variety of social and economic factors, and not simply by individual behavioral resistance which has been the dominant discourse in the past. The enhanced social status from latrine ownership tends to have the positive impact but not in every instance. These issues are real and play a part in explaining low sanitation coverage in rural India. India will take the necessary steps to increase sanitation coverage and create awareness among people about rural sanitation.

Appendix 4.1: Role of Different Agencies at Governance Levels

Zilla Panchayat	The first tier in panchayat Raj institutions is responsible for planning, implementing and monitoring all the developmental programs in the district, which are being carried out by the Zilla Panchayat engineering subdivision. It takes the responsibility of constructing the MWS and PWS.
Taluk Panchayat	Taluk Panchayat liaisons between ZP and Gram Panchayat, and is responsible for implementing and monitoring developmental works at taluk level. It takes the responsibility of bore well hand pumps.
Gram Panchayat	Gram Panchayat is the lowest tier of panchayat and has its own plan for implementation after getting approval from Taluk Panchayat. It is also responsible for collecting water charges, operations and maintenance of water supply schemes such as MWS and PWS.
Village Water Supply and Sanitation Community (VWSC)	VWSC Participates in world bank assisted project, and Integrated Rural Water Supply and Sanitation. VWSC plays a crucial role in planning, implementation and operation and maintenance of the assets created.

CHAPTER-5

STATUS OF RURAL WATER SUPPLY AND SANITATION IN KARNATAKA

5.1: Introduction

Karnataka is one of the leading States in India with a population of 52.73 million as per 2001 census. It is the 8th largest State in area (1,91,791 sq. km) and 9th largest State in population in the country. It is situated in the southern part of the country between 11.50N and 18.50N latitude and 740E and 78.50E longitude. Maharashtra and Goa surround it on the north, Andhra Pradesh on the east, and Tamil Nadu and Kerala on the south. On the west, it opens out on the Arabian Sea. As per 2001 census, 34.81 million people (66.02%) live in rural areas and 17.92 million people (33.98%) live in urban areas in Karnataka. There are 29 districts, 176 blocks and 29406 villages. The State has population density of 275 per sq. km (as against the national average of 312). The decadal growth rate of the state is 17.51% (against 21.54% for the country) and the population of the state is growing at a slower rate than the national rate. The sex ratio in the State is 965 (as compared to 933 for the country). According to 2001 census, the rate of literacy of the state is 66.6 per cent, which is higher than the national average of 65.38 %. Male literacy rate is 76.1 per cent and female literacy rate is 56.9 per cent in the state. The per capita NSDP at constant price was 18324 during the year 2001-2002.

Water supply and sanitation is a State responsibility under the Indian Constitution. Various Ministries share the responsibility for water supply and sanitation at the central and state level. The Ministry of Rural Development is responsible for rural water supply through its Department of Drinking Water Supply (DDWS). The Ministry of Housing and Urban Poverty Alleviation is indirectly responsible for water supply and sanitation in urban areas.

Karnataka Urban Water Supply and Drainage Board (KUWS&DB) is a nodal agency for creating water supply and sanitations facilities to urban areas, except Bangalore, which has adopted an adequacy norm stipulated by the Central Public Health Engineering Organization (CPHEEO) ranging from 70 to 135 LPCD of water supply based on population size of the urban area. Out of 226 Urban Local Bodies (ULBs), about 208 ULBs the KUWS&DB have taken up drinking water supply and sanitation works. In the remaining 18 ULBs, Bangalore Water Supply and Sewerage Boards (BWSSB) has taken up water supply and sanitation work under the guidance of CPHEEO.

In the rural areas in Karnataka, Rural Development and Panchayat Raj Department is a statutory body looking after planning, designing, management and implementation of rural water supply and sanitation schemes spread over 56682 rural habitations in the state. The Rural Development and Panchayat Raj Department (RDPRD) aims to provide adequate water supply from assured and safe sources, and proper sanitation facility in all rural areas of the state. Karnataka, like most other states in India, has continued to increase budgetary allocation to the water supply and sanitation sector over the plan periods both on welfare and political grounds. However, at the district level, the Zilla Panchayat (ZP) undertakes the responsibility. The District Level Implementation Committee, which is headed by the CEO of the ZP, guides the programme. After implementation of the schemes by Zilla Panchayat and Taluk Panchayat, the assets are handed over to the concerned Gram Panchayat for further operation and maintenance. However, as per the directions of the Zilla Panchayat and Taluk Panchayat, the Gram Panchayat maintains water supply and sanitation.

This chapter presents a brief overview of the status of drinking water supply and sanitation in Karnataka and financing of water supply and sanitation, and operation and maintenance of water supply and sanitation schemes.

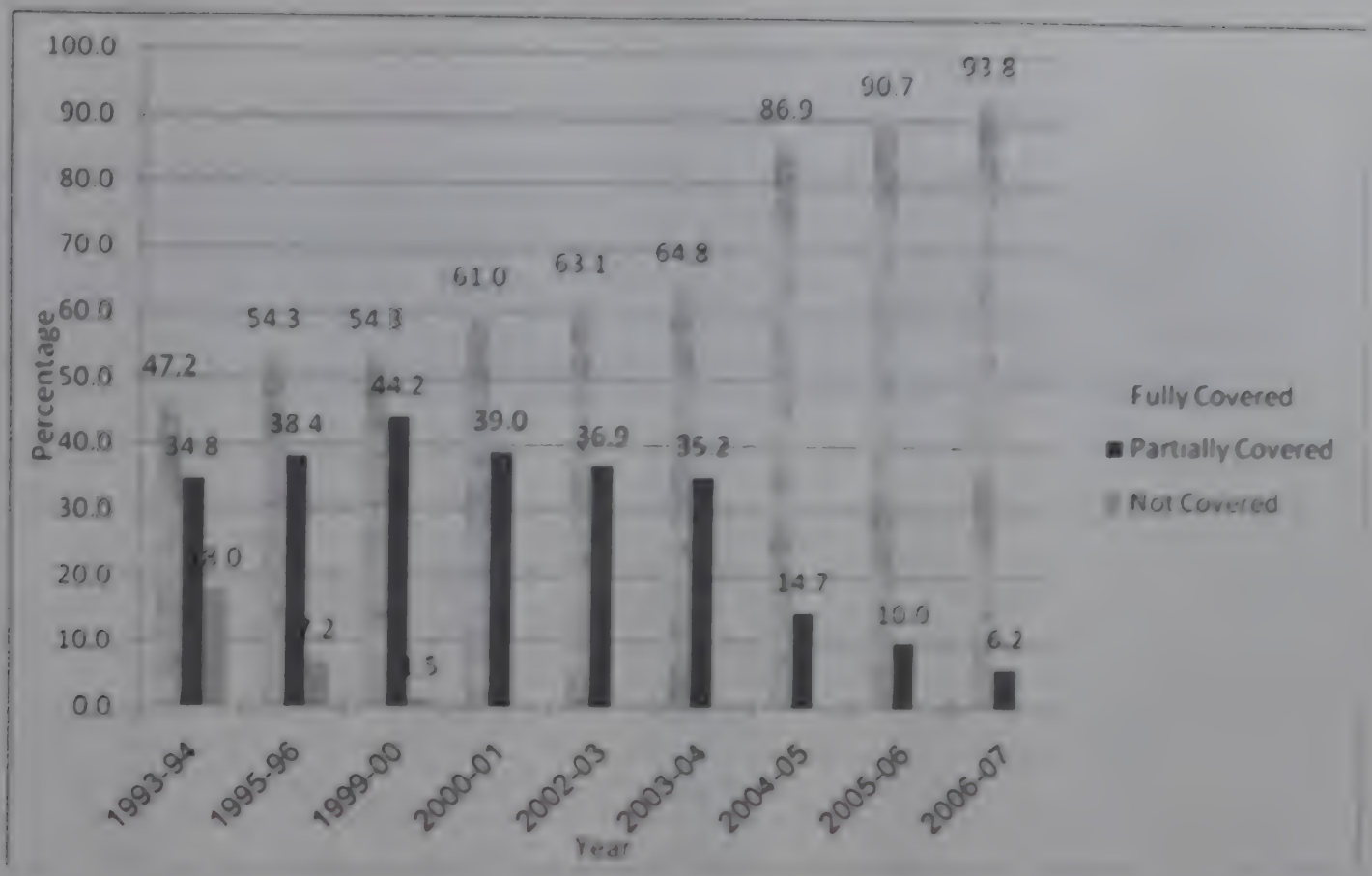
5.2: Status of Drinking Water Supply and Sanitation in Rural Karnataka

Provision of drinking water and sanitation in rural areas has been one of the major priorities of the Government of Karnataka. The State is responsible for providing water supply and sanitation and to bring about social welfare through maintaining equity, efficiency and sustainability in implementing water supply programmes (RDPRD, Strategy paper: 2005). As a way of providing background and context for the ensuing discussion, we have presented a brief review of the overall status and performance of the rural water supply and sanitation sector of Karnataka in continuation of our discussion on national situation presented in chapter 4.

5.2. A. Status of Rural Drinking Water Supply

The rural drinking water supply programmes in Karnataka are being planned, designed and implemented by Public Health Engineering Department (PHED) under the overall control of the Panchayat Raj and Rural Development Department. Since, the introduction of decentralized governance, the decisions are being taken at Zilla Panchayat engineering department. The Ministry of Rural Development and Panchayat Raj Department at the State level, Zilla Panchayat at district levels, and Gram Panchayat at habitation levels co-ordinate for drinking water supply to the rural population. The rural water supply programme has been implemented under MNP in the State sector and ARWSP in the Central sector. The programme is implemented under the World Bank assisted programme of the Netherlands and DANIDA. Despite huge funding and investments made by various agencies, many of the habitations and households are still denied accessibility to adequate supply of drinking water. Figure 5.1 shows that, about 6.2 per cent of rural habitations in Karnataka have to be covered fully by different rural water supply schemes. From the year 2000 habitations fully covered have swiftly increased from 61.0 per cent to 93.8 per cent in the year 2006. In terms of coverage, the service levels for the rural water supply systems in Karnataka are lower when compared with the national level (see table 4.1).

Figure 5.1: Coverage of Habitation in Karnataka 1993-2006



Source: Various year RDPRD reports and Economic Survey of India

5.2b.Norms of Supplying Water

Inadequacy of safe drinking water supply is an indication of several problems (Das 2000, Puttaswamaiah, 2005). A certain quantity of water is essential for life and maintenance of personal hygiene, the absence of which results in health problems like dehydration, skin diseases, etc. During the introduction of Accelerated Rural Water Supply Programme, the Central Government approved norms for supplying water for domestic purposes aimed at providing at least 40 liters per capita per day (lpcd) to rural habitations to meet the minimum requirements. The Government of Karnataka aims at providing 55 liters per capita per day (LPCD) drinking water to rural areas, from different water supply schemes. Table 5.1 presents the level of drinking water supply to rural inhabitants. About 60 per cent of rural habitations are getting insufficient water (i.e. less than 55 lpcd). Coverage of the rural habitations with adequate drinking water increased from 47.2 per cent in 1993 to 93.8 per cent in 2006 (Figure 5.1). However, about 39.7 per cent of the rural

habitations are yet to be covered with adequate drinking water supply in Karnataka.

Table 5.1: Level of Drinking Water Supply in Rural Areas

Year	Up to 55 LPCD	More than 55 LPCD	Total Habitations	Up to 55 LPCD	More than 55 LPCD	Total
	Number			Percentage		
2000-01	22120	34562	56682	39.02	60.98	100.00
2001-02	20495	36187	56682	36.2	63.8	100.0
2003-04	35976	20706	56682	63.5	36.5	100.0
2004-05	39571	17111	56682	69.8	30.2	100.0
2005-06	36682	20000	56682	64.7	35.3	100.0
2006-07	36225	20457	56682	63.9	36.1	100.0
2007-08	35933	23697	59630	60.3	39.7	100.0

Source: Annual Reports of RDPR

5.2c. Source of Water:

The main source of drinking water is groundwater, which is generally free from bacterial and mineral contamination when tapped from aquifers. Karnataka depends mainly (95 per cent) on ground water resources for water supply in the rural habitations and villages and is mainly done through piped-water supply scheme, mini water supply scheme, and bore well/ hand pumps. Hand pumps are provided in case of villages with a population less than 500 where adequate ground water is available within one kilometer (KM) from the village. Mini Water Supply Schemes are provided to villages with bore well fitted with power pumps. The population of such villages would be between 500 and 1000. For the villages with a population of more than 1000, piped water supply schemes are provided. In this system water is supplied through a more elaborative distribution system and stand posts. In certain cases, house service connections are provided. Table 5.2 depicts division and district wise main sources of drinking water in rural Karnataka. Bore wells (39.45 %) and

Open wells (32.80 %) are major water sources followed by PWS and MWS in Karnataka during the year 2002-03. The dependence on water sources differs from one district to another or one division to another division. For instance, in Bangalore division people depend more on bore wells (63 %), where as dependence in Belgaum division is more on PWS. On the other hand, based on geographical area the districts of costal area like Dakshina Kannada (80.25 %), Udupi (67.86 %) and Uttar Kannada (80.22 %) depend more on open wells. The malnad area (except Shimoga district depend more on open wells 59.20 %). Districts like Kodagu (66.93 %), Hassan (55.81%) and Chikkamagalur (54.95 %) depend on Bore wells. The Northen Plains' districts like Gulbarga (64.07 %), Raichur (65.59 %), Koppal (70.6 %), Bellary (63.86 %), Bijapur (63.77 %), Bagalkot (67.96 %), Dharwad (46.56 %), Gadag (69.72 %), and Haveri (63.97 %) depend on bore wells. The southern part of the state, Davangere (64.33%), Chitradurga (71.47%), Tumakur (68.51%), Bangalore (56.94), Bangalore Rural (67.48%), Kolar (50.28 %), Mandya (46.07), Mysore (62.43%), depend more on bore wells Chamaraj Nagar depends largely (67.7) on PWS.

Table 5.2: Division/ Districts Wise Open Wells/ PWS /MWS/Hand Pumps in 2002-03

Districts	In Number				In Percentage					
	Open Wells	Bore Wells	Mini Water Supply Schemes	Piped Water Supply Schemes	Total	Open Wells	Bore Wells	Mini Water Supply Schemes	Piped Water Supply Schemes	Total
Bangalore	780	780	2781	931	392	15.97	56.94	19.06	8.03	100
Bangalore Rural	1724	1724	8966	1827	770	12.98	67.48	13.75	5.8	100
Chitradurga	309	309	5022	1267	429	4.4	71.47	18.03	6.11	100
Davangare	744	744	4570	1153	637	10.47	64.33	16.23	8.97	100
Kolar	2238	2238	5194	2156	742	21.67	50.28	20.87	7.18	100
Shimoga	1001	1001	624	47	19	59.2	36.9	2.78	1.12	100
Tumakur	1383	1383	9490	2163	815	9.98	68.51	15.62	5.88	100
Bangalore Division	**8179**	**8179**	**36647**	**9544**	**3804**	**14.06**	**63**	**16.41**	**6.54**	**100**
Belgaum	8621	8621	8341	3187	3134	37.03	35.82	13.69	13.46	100
Bijapur	1091	1091	3633	532	441	19.15	63.77	9.34	7.74	100
Bagalkot	490	490	3126	542	442	10.65	67.96	11.78	9.61	100
Dharwad	304	304	1335	795	433	10.6	46.56	27.73	15.1	100
Gadag	346	346	1971	260	250	12.24	69.72	9.2	8.84	100
Haveri	326	326	2486	614	460	8.39	63.97	15.8	11.84	100
Uttarkannada	24329	24329	4958	646	394	80.22	16.35	2.13	1.3	100
Belgaum Division	**35507**	**35507**	**25850**	**6576**	**5554**	**48.32**	**35.18**	**8.95**	**7.56**	**100**
Bellary	767	767	3819	881	513	12.83	63.86	14.73	8.58	100
Bidar	1584	1584	2873	19041	26933	3.14	5.7	37.76	53.41	100
Gulabarga	2349	2349	7421	1056	726	29.28	64.07	9.38	6.27	100
Raichur	1054	1054	4088	730	361	16.91	65.59	11.71	5.79	100
Koppal	361	361	3451	650	426	7.39	70.6	13.3	8.72	100
Gulabarga Division	**6115**	**6115**	**21652**	**22388**	**28959**	**7.73**	**27.37**	**28.3**	**36.6**	**100**
Chikmagalur	2687	2687	4987	863	538	29.61	54.95	9.51	5.93	100
Dakshina Kannada	28532	28532	5639	800	582	80.25	15.86	2.25	1.64	100
Udupi	9483	9483	3928	299	264	67.86	28.11	2.14	1.89	100
Hasan	4121	4121	7559	1132	732	30.43	55.81	8.36	5.4	100
Kodagu	1254	1254	3414	265	168	24.58	66.93	5.2	3.29	100
Mandya	5631	5631	7814	2202	1313	33.2	46.07	12.98	7.74	100
Mysore	2560	2560	7696	919	1152	20.77	62.43	7.46	9.35	100
Chamaraj Nagar	921	921	5715	32382	81799	0.76	4.73	26.8	67.7	100
Mysore Division	**55189**	**55189**	**46752**	**38862**	**86548**	**24.27**	**20.56**	**17.09**	**38.07**	**100**
Karnataka	**104069**	**104069**	**125186**	**44988**	**43066**	**32.8**	**39.45**	**14.18**	**13.57**	**100**

Sources: RDPRD (GoK) Samanyamahiti 2002-03

http://stg1.kar.nic.in/samanyamahiti/smenglish_0203/default.htm accessed on 18-4-2009

5.2d. Status of Water Quality

Water borne diseases constitute 80 per cent of the health problem of the population in India. As mentioned in previous chapter (table 4.3), Karnataka is one of the States facing the problem of water quality among all major states. Water-borne diseases constitute 80 per cent of the health problems of the population in India and man-days lost due to such easily preventable disease which are estimated to be around 73 million (Wishwakarma, 1993). Water quality problems have been on the increase due to groundwater depletion as water is being procured from deeper acquifers. In Karnataka, the Rural Development and Engineering Department (RDED) has taken up the testing of drinking water samples in rural areas on massive scale. Table 5.3 showsthat out of the sample test collected from 37,776 sources, 37 per cent of the sources had water quality problems. Many rural habitations in Karnataka are facing health problem also due to inadequate use of water (Puttaswamaiah, 2005, Raju, 2006).

Table 5.3: Status of Quality Affected Habitations in Karnataka in 2003

Contamination Beyond Prescribed Limits	Number of Habitations Affected	In Percentages
Excess Fluoride	5,838	10.3
Excess Iron	6633	11.7
Excess Nitrate	4077	7.2
Brackishness	4460	7.9
Total	21088	37.1

Source: RDPRD Document, 2003

Table 5.4 shows that, out of the 37 per cent (20.929) of habitations affected, a large number are affected by excess iron: followed by excess fluoride, excess TDS and Nitrate in descending order.

Table 5.4: Contamination of Water in the Habitations

Types of Contamination	Habitations	
	Number	Percentage
Iron	6629	31.6
Fluoride	5822	27.8
TDS	4401	21.0
Nitrate	4103	19.6
Total	20949	100

Source: RDPRD Document, 2003

Table 5.5: Status of Water Quality by Habitations in Karnataka State-2002

Districts	Total No. of habitations affected	Total No. of habitations	% of Affected Habitations
Bangalore	804	1285	62.57
Bangalore Rural	1154	3394	34.00
Chitradurga	1077	1369	78.67
Davangare	803	1084	74.08
Kolar	1942	3742	51.90
Shimoga	540	4424	12.21
Tumakur	3709	5484	67.63
Bangalore Division	**10029**	**20782**	**48.26**
Belgaum	713	1506	47.34
Bijapur	573	928	61.75
Bagalkot	414	624	66.35
Dharwad	239	494	48.38
Gadag	169	350	48.29
Haveri	158	630	25.08
Uttarkannada	256	3901	6.56
Belgaum Division	**2522**	**8433**	**29.91**
Bellary	644	1168	55.14
Bidar	217	812	26.72
Gulabarga	653	2296	28.44
Raichur	697	1219	57.18
Koppal	531	709	74.89
Gulabarga Division	**2742**	**6204**	**44.20**
Chikmagalur	788	3366	23.41
Mangalore	300	3137	9.56
Udupi	232	5640	4.11
Hasan	702	3900	18.00
Kodagu	315	573	54.97
Mandya	1411	1873	75.33
Mysore	948	1934	49.02
Chamaraj Nagar	659	830	79.40
Mysore Division	**5355**	**21253**	**25.20**
Karnataka	**21008**	**56682**	**37.06**

Source: Rural Development and Engineering Department-2002

Table 5.5 shows division and district wise status of water quality affected rural habitations in the year 2002. About 37 per cent habitations are water quality affected in Karnataka. Therefore, the State ranks first among quality affected states in India (GOI, 2006). Bangalore and Gulabarga divisions are more water quality affected compared to state averages. The coastal districts like Dakshina Kannada (9.56 %), Udupi (4.11 %) and Uttar Kannada (6.56%) are less water quality affected districts compared with districts of other divisions.

5.2.B: Status of Rural Sanitation in Karnataka

Karnataka government is giving top priority to develop environmental sanitation and health communication strategies. According to 1991 census, only 6.9 per cent of households were having latrine facility in rural Karnataka. A study by Saleth and Sastry (2004) also indicated that about 6.8 per cent of households had access to latrine facility in rural Karnataka. Although the situation has improved over the years, the sanitation levels especially in the rural Karnataka (22%) were far below the national average (57 %) during the year 2007-08 (GOI, 2008).

Table 5.6: Coverage of Rural Sanitation in Karnataka

Districts	With Toilets	Without Toilets	Total	%age Coverage
Bangalore	68254	100191	168445	40.52
Bangalore Rural	80164	203706	283870	28.24
Chitradurga	26757	205950	232707	11.50
Davangare	52937	219108	272045	19.46
Kolar	98797	282542	381339	25.91
Shimoga	126700	91660	218360	58.02
Tumakur	152199	274231	426430	35.69
Bangalore Division	**605808**	**1377388**	**1983196**	**30.55**
Belgaum	69015	589112	658127	10.49
Bijapur	19687	235780	255467	7.71
Bagalkot	20612	182285	202897	10.16
Dharwad	28569	119646	148215	19.28
Gadag	23193	94603	117796	19.69
Haveri	34226	173682	207908	16.46
Uttarkannada	36331	161887	198218	18.33
Belgaum Division	**231633**	**1556995**	**1788628**	**12.95**
Bellary	43695	181454	225149	19.41
Bidar	40807	156013	196820	20.73
Gulabarga	13670	441990	455660	3.00
Raichur	18804	219746	238550	7.88
Koppal	12304	170929	183233	6.71
Gulabarga Division	**129280**	**1170132**	**1299412**	**9.95**
Chikmagalur	63668	111813	175481	36.28
Mangalore	143936	80609	224545	64.10
Udupi	102576	78176	180752	56.75
Hasan	28544	276222	304766	9.37
Kodagu	57236	39581	96817	59.12
Mandya	55626	258334	313960	17.72
Mysore	76340	272920	349260	21.86
Chamaraj Nagar	34047	138985	173032	19.68
Mysore Division	**561973**	**1256640**	**1818613**	**30.90**
Karnataka	**1528694**	**5361155**	**6889849**	**22.19**

Source: Govt. of India, Dept. of Drinking Water Supply http://www.ddws.gov.in. Accessed; 24-Feb-2009

Table 5.6 depicts division and district wise coverage of households' sanitation in rural Karnataka. In 2007, the household sanitation coverage of Karnataka was 22.19 per cent. Divisions like Bangalore and Mysore were having higher latrine facility compared to State level. The Belgaum and Gulabarga divisions were having latrine facilities far below the State level. Districts like Gulabarga, Koppal, Bijapur, Raichur, Hasan, Bagalkot, Belgaum, Chitradurga, Haveri, Mandya, Uttarkannada, Dharwad, Bellary, Davangare, Chamaraj Nagar, Gadag, Bidar and Mysore were having less coverage of latrine facility compared to state level. On the other hand Kolar, Bangalore Rural, Tumakur, Chikmagalur, Bangalore, Udupi, Shimoga, Kodagu and Dakshina Kannada are advanced in household sanitation coverage. Dakshina Kannada had the highest household sanitation coverage at 64.1 per cent and Gulabarga had lowest household sanitation coverage at 3.0 per cent among all districts in Karnataka.

5.3: Financial Resources for Water Supply in Rural Karnataka

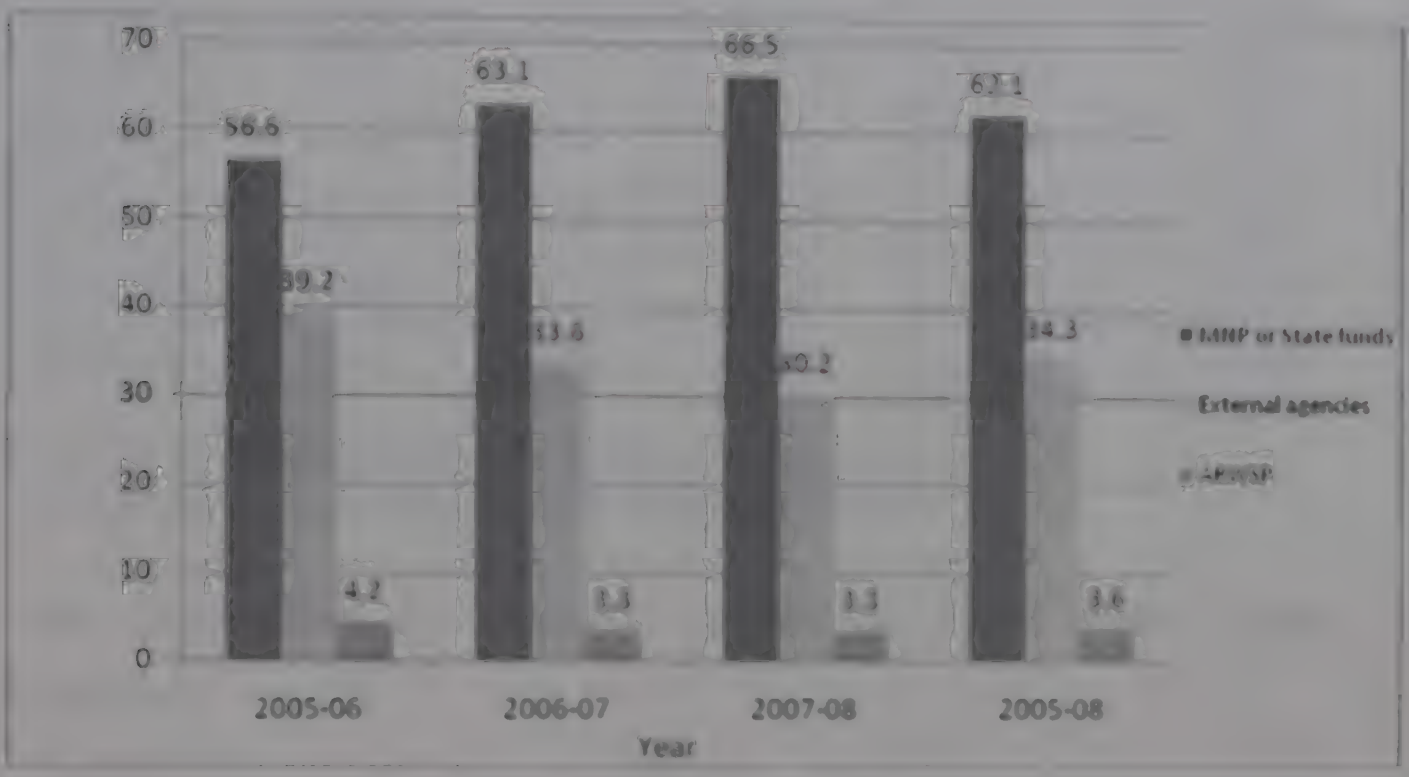
The financial aspect of rural water supply is a matter of very grave and urgent concern. The financial sources at the state level are budgetary allocation from the centre and state, external funding, NGO, and user financing. The centre and state governments provide funds under plan and non-plan budgetary allocations. In addition, ad-hoc funds are provided from drought management and from area development programme funds made available by MLAs and MPs.

Among the above sources, presently, the most reliable and sustainable sources are budgetary allocations, where government allocates the required funds on estimates made by department. Funds from Bilateral and Multilateral agencies are very specific and occasionally available as one time aid-cum–loan from the state government. Under the area development funds, investments are made on political grounds rather than the need for investment. This section presents different sources of funding on rural water supply, share of total rural water supply expenditure in Karnataka and utilisation of funds under various schemes.

5.3a: Investment under different programmes in Karnataka

During the last three years (2005-08), the total share of state government sources was about 62.1 per cent as shown in Figure 5.2. In addition around 34.3 per cent, funding came from external agencies (World Bank Netherland and Danida). The external agency funds were provided for specific durations and programmes and were mainly for creating assets. The responsibility of their maintenance falls on the state.

Figure 5.2: Sources of Finance during 2005-08



Source: Annual Reports of RDPR

Table 5.7 provides the share of expenditure incurred on RWS to total expenditure in the State for the period 1992-93 to 2003-04, which fluctuated between 2.66 and 5.76 per cent. The variation was due to two reasons i.e., the increased allocation during drought situations and funds supplemented by external agencies. As mentioned earlier (in chapter 4), the share of Central government is lower than that of the State. The share of the state has always been higher than the share of the central government except for the period 1998-99. From 1999-00 the state expenditure has been more than 2/3rd of the total expenditure on rural water supply.

Table 5.7: Parentage Share of RWS Expenditure in Karnataka (Rs in Lakh)

Year	RWS Expenditure		Total Expenditure		Share of RWS Expenditure
	State	Center	State	Center	
1992-93	56.43	43.57	83.89	16.11	2.66
1993-94	57.32	42.68	85.95	14.05	2.75
1994-95	59.95	40.05	85.73	14.27	2.9
1995-96	57.36	42.64	89.52	10.48	3.59
1996-97	54.99	45.01	89.00	11.00	3.37
1997-98	51.92	48.08	89.77	10.23	3.86
1998-99	47.37	52.63	90.80	9.20	2.89
1999-00	69.23	30.77	81.36	18.64	5.76
2000-01	66.16	33.84	91.57	8.43	3.95
2001-02	66.44	33.56	91.07	8.93	3.41
2002-03 @	64.69	35.31	90.30	9.70	3.29
2003-04 #	63.92	36.08	91.80	8.20	3.05

Note: @ Revised estimates, #: Budgetary Expenditure
Source: Annual Reports of RDPR, Economic Survey

5.3b: Expenditure by External Agencies on Rural Water Supply in Karnataka

The delay in execution of the programme was evident not only in Centre and State sponsored projects, but also in external agencies' (multilateral and bilateral) projects. The World Bank is the major investor, followed by DANIDA and the Netherlands. Spillover of the time was mainly attributed to conflicts between government and NGOs. This is mainly because of lack of co-ordination between these agencies. Many districts and habitations faced various problems in executing the externally sponsored programmes because of new concepts and involvement of several players. It has been observed in many villages that norms were not followed while implementing the programme while huge amount was spent on implementation (Veershekharappa: 2002). The setback in implementation had a cascading effect on the cost of the project. Thus, the intervention of government in the process of implementation has

contributed to inefficiency and ineffectiveness and increased the cost of projects. Table 5.8 shows the details of expenditure by external agencies on water supply and sanitation.

Table 5.8: Details of Expenditure by External Agencies

Period	Agency Name	Amount (Rs in Lakh)	Districts	Villages/Habiation Covered
1993-2000	World Bank	50600	12	1104
1994-2002	Netherland	8871	5	201
1993-1997	Danida	6363	5	719
Total		65834	22	2024
2002-2006	Danida II	12000	2	410
2002-2007	World Bank II	103500	11	2100

Source: Annual Reports of RDPRD

5.3c: Funds Utilisation under Different Schemes in Karnataka

Table 5.9 provides details about the allocation and utilisation of funds through different schemes in Karnataka during the period 1993-94 to 2006-07. According to the table, about 91.07 per cent of the allocations for MWS were utilised; whereas the utilisation was 75.4 per cent for bore well/ hand pump (BHP) and 89.98 % for PWS. Although, in the case of MWS, the funds were better utilised compared to BHP and PWS, due to lack of administration, delay in providing grant for water supply in time and due to other various reasons 100 per cent funds were not utilised in the same year.

Table 5.9: Utilisation of Funds under Various Schemes (Rs in Lakhs)

Year	Bore well/ Hand pump		Mini Water Supply		Piped Water Supply		Total	
	Allocation	Percentage of Utilised	Allocation	Percentage of Utilised	Allocation	Percentage of Utilised	Allocation	Percentage of Utilised
1993-94	1513.57	82.67	1763.43	101.39	3430.00	100.69	6707.00	96.81
1994-95	1714.24	88.06	1620.00	112.46	3019.00	116.35	6353.24	107.73
1995-96	2666.26	81.82	1847.39	124.19	3696.99	118.85	8210.64	108.03
1996-97	2966.03	91.26	2492.99	111.11	5196.26	87.48	10655.28	94.06
1997-98	3598.45	88.46	3307.38	109.26	6354.94	101.97	13260.77	100.12
1998-99	3202.89	79.32	3611.84	99.72	5759.42	95.28	12574.15	92.49
1999-00	2832.53	64.97	3492.20	112.62	5915.50	109.31	12240.23	99.99
2000-01	2622.23	53.39	3547.99	89.49	5933.19	76.42	12103.41	75.26
2001-02	2680.44	46.58	3737.46	88.01	6393.19	83.17	12811.09	76.93
2002-03	2525.00	78.38	3556.00	93.22	5811.00	87.27	11892.00	87.16
2003-04	2545.00	89.94	3682.00	90.58	5802.00	83.52	12029.00	87.04
2004-05	2767.00	83.45	4856.00	75.72	6223.00	76.96	13846.00	77.82
2005-06	3210.00	130.34	5998.00	89.05	4740.00	167.64	13948.00	125.26
2006-07	3774.00	68.39	6527.00	69.22	13069.00	44.74	23370.00	55.40
Total	38617.64	75.14	50039.68	91.07	81343.49	89.98	170000.81	85.61

Source: Annual Reports of RDPRD

5.4: Financial Resources on Sanitation in Rural Karnataka

Sanitation is essential for a healthy, secure and dignified existence. Lack of sanitation affects most severely women and girls and improving sanitation in schools, public buildings and homes can address to the problems of imbalance between women and men. Households are the real investors in rural sanitation – investing about 10 times above government subsidy. Even though, the Government of Karnataka has given utmost important to rural sanitation a large section of the population does not have sanitation facilities in rural areas. The Karnataka Panchayat Raj Act 1993 lists maintenance of general sanitation, cleaning of public roads, drains, and construction and maintenance of public latrines among the function of Gram Panchayats (Section 58 and schedule 1 entry XVIII). Under the TSC, Nirmal Grama Yojana and Swacha Grama Yojana funds are provided for rural sanitation.

5.4a: Nirmal Grama Yojana

The status of sanitation normally indicates the health condition of people living in the society. State government has given top priority to develop environmental sanitation and health communication strategies. The rural development and Panchayat Raj department, Government of Karnataka launched a programme viz 'Nirmal Grama Yojana' on 2nd October 1995 to assist rural population in the state. It was planned to cover 30 per cent of rural habitations in the state under this scheme by the year 2000 on subsidy pattern.

The main objective of this scheme was to create mass awareness among the rural people particularly for those below poverty line about the improvement needed in their day-to-day activities related to sanitary and hygienic condition. There is a provision to utilise 10 per cent of the grants for the construction of institutional latrines in the premises of school buildings, anganawadi buildings, primary health centers and sub centre. And the subsidy is given to the concerned as stipulated in the government order for latrines. A cash subsidy of Rs 2000 per household is given to BPL households were Non-

BPL households were given Rs 1200. The cost of the programme is shared by Centre and State governments on 50:50 basis.

Table 5.10: Utilisation of Funds under Nirmal Grama Yojana Schemes (Rs in Lakhs)

Year	Allocation	Percentage of Utilised
1993-94	232.78	66.29
1994-95	1512.00	32.70
1995-96	4204.73	51.85
1996-97	4150.35	54.19
1997-98	4431.53	45.73
1998-99	3600.00	63.85
1999-00	2884.94	67.32
2000-01	2643.59	61.39
2001-02	1562.20	76.48
2002-03	1630.00	72.39
2003-04	726.00	74.52
2004-05	605.00	30.74
Average percentage		**58.12**

Source: Annual Reports of RDPR

Table 5.10 depicts allocation and utilisation of funds under the Nirmal Grama Yojana Scheme. It has been a major rural sanitation scheme (except TSC) in Karnataka. It is clear from table 5.10 that only 58.12 per cent of the funds have been utilised from the year 1993 to 2005 under the Nirmal Grama Yojana scheme. However, from 2001 more than 75 per cent of the funds have been utilised (except year 2004-05) to provide sanitation.

5.4b: Swacha Grama Yojana

After the Niramala Grama Yojana Scheme, Government of Karnataka implemented Swacha Grama Yaojana. This programme is for total sanitation of rural habitations and implemented on the panchasutra base and community

participation. The following works are implemented under this programme. (a.) Improvement of internal roads and rural road surface and construction of rain/storm water drains, (b.) Toilets for schools, (c.) Individuals and community toilets for all rural masses, (d.) Smokeless chulhas for all rural houses, and (e.)Construction of community compost yards for domestic waste.

Table 5.11: Utilisation of funds under Swacha Grama Yojana (Rs in Lakhs)

Year	Phase -I					Phase -II				
	Allocation (Amount in Rs)	Percentage of Utilised	No of village Sectioned	No of Completed works in Villages	% of Completed works in Villages	Allocation (Amount in Rs)	Percentage of Utilised	No of village Sectioned	No of Completed works in Villages	% of Completed works in Villages
2005-06	24884.35	75.69	1300	480	36.92	3307.58	52.22	1000	84	8.40
2006-07	26000.00	77.12		578	44.46	10000.00	42.60		155	15.50
2007-08	24489.70	85.16		680	52.23	10000.00	66.56		358	35.80

Source: Annual Reports of RDPR

Table 5.11 shows utilisation of funds under Swacha Grama Yojana in two phases. In the first phase about 75 per cent of the amount was spent on rural sanitation during the year 2005-06 to 2007-08. Although the work was taken up in 1300 villages, only in 680 villages (52.23 per cent) the work has been completed in the 1st phase. Under the second phase only 66.56 per cent was spent on sanitation during the year 2007-08. Apart from Phase-1, 1000 villages were selected under Swacha Grama Yojana- II phase, but only in 358 villages (35.8 per cent) the work was completed in 2007-08.

5.4c.: Nirmal Gram Puraskar

As part of the Total Sanitation Campaign (TSC) the Nirmal Gram Puraskar (NGP) was announced on 2nd October 2003, as a national award to honor, facilitate and encourage those Panchayati Raj Institutions (PRIs), which have attained total sanitation in their respective area. A Nirmal Gram is an "open defecation free" village with all houses, schools and anganwadis having

sanitary toilets and a community is aware of the importance of maintaining hygiene, good sanitation and clean environment.

Main Objectives of Nirmal Gram Puraskar

The main objectives of Nirmal Gram Puraskar are:

1. To bring sanitation to the forefront of social and political discourse for development in rural India.
2. To develop open defecation free and clean villages that will act as models for others to emulate.
3. To give incentive to PRIs to sustain the initiatives taken by them to eliminate the practice of open defecation from their respective geographical area by way of full sanitation coverage.
4. To increase social mobilization in TSC implementation, by recognizing the catalytic role played by organization in attaining universal sanitation coverage.

The following are eligible to receive the Nirmal Gram Puraskar:

1. Gram Panchayats, Blocks and Districts, which achieve 100% sanitation coverage in terms of (a) 100% sanitation coverage of individual households, (b) 100% school sanitation coverage (c) free from open defecation and (d) clean environment maintenance.

2. Individuals and organizations, who have been the driving force for effecting full sanitation coverage in the respective geographical area.

Procedure for Payment of Incentive Amount

Once the PRI is selected by the National NGP selection committee, the total incentive amount for all the PRIs falling in a particular State will be transferred to the TSC account of the State concerned which in turn will release it to the awardees. The prize money will be released in two equal instalments. The first instalment will be released immediately after the selection of GPs for the award. Release of the second instalment is contingent on the sustainability

of the open defecation free (ODF) and Niraml gram status attained by the GP. An incentive pattern under NGP is mainly depending on population criteria, details of which are given in table 5.12.

Table 5.12: Incentive Pattern under Nirmal Gram Puraskar (in Rs. lakh)

Particulars	Gram Panchayat					Block		District	
Population Criteria	Less than 1000	1000 to 1999	2000 to 4999	5000 to 9999	10000 and above	Up to 50000	50001 and above	Up to 10 lakhs	Above 10 lakhs
PRI	0.50	1.00	2.00	4.00	5.00	10.00	20.00	30.00	50.00
Individuals	0.10					0.20		0.30	
Organisations/ other than PRIs	0.20					0.35		0.50	

Source: Govt. of India, Dept. of Drinking Water Supply http://www.ddws.nic.co.in. Accessed; 26-Jan-2011

District wise GPs awarded under NGP in Karnataka

Table 5.13 depicts the number of GPs that have received award under the NGP during the year 2007-08 in Karnataka. About 15 percent of GPs are awarded under NGP in Karnataka. The districts like Dakshin Kannada (99.5%), Shimoga (88.1%), and Udupi (72.6%), GPs have received more awards under the NGP than the other districts. In backward districts like Gadag, Haveri, Bellary, Gulabarga, Raichur, and Chamaraj Nagar not even a single GP has received award under NGP in the reference period. It should be noted that only 3.6 percents GPs have received awards under the NGP in Dharwad district, which is less than the state level. Divisions like Bangalore and Mysore have received more awards under NGP compared to State level.

Table 5.13: District wise GPs Awarded under NGP in Karnataka during the Year 2007-09

Districts	No of GPs Awarded NGP	Percentage	% of GPs Awarded NGP
Bangalore	9	1.1	10.5
Bangalore Rural	41	4.9	18.0
Chitradurga	1	0.1	0.5
Davangare	5	0.6	2.2
Kolar	3	0.4	1.0
Shimoga	229	27.2	88.1
Tumakur	5	0.6	1.6
Bangalore Division	**293**	**34.8**	**18.1**
Belgaum	26	3.1	5.4
Bijapur	1	0.1	0.5
Bagalkot	5	0.6	3.1
Dharwad	5	0.6	3.9
Gadag	NR*	0.0	0.0
Haveri	NR	0.0	0.0
Uttarkannada	83	9.8	40.3
Belgaum Division	**120**	**14.2**	**8.0**
Bellary	NR	0.0	0.0
Bidar	1	0.1	0.6
Gulabarga	NR	0.0	0.0
Raichur	NR	0.0	0.0
Koppal	1	0.1	0.7
Gulabarga Division	**2**	**0.2**	**0.2**
Chikmagalur	54	6.4	23.9
Dakshin Kannada	203	24.0	99.5
Udupi	106	12.6	72.6
Hasan	18	2.1	7.0
Kodagu	33	3.9	33.7
Mandya	7	0.8	3.0
Mysore	5	0.6	2.1
Chamaraj Nagar	NR	0.0	0.0
Mysore Division	**428**	**50.8**	**28.2**
Karnataka	**843**	**100.0**	**15.0**

Source: Govt. of India, Dept. of Drinking Water Supply http://www.ddws.nic.co.in. Accessed; 26-Jan-2011

Note: *NR not received award under NGP

5.5: Operation and Maintenance Expenses

Sources of Finance

The capital investment in this sector though huge is one time investment, whereas the investment on operation and maintenance is a recurring one. This always contributes to increase in non-plan expenditure. In fact every new system is added to the pool of maintenance expenditure, and this takes away a large chunk of budgetary allocation. This has been due to lack of recovery of user charges. In fact no system meets the cost of entire operation and maintenance from the collection of user charges. In the absence of adequate cost recovery, the government is responsible for making adequate funding to O&M requirements (World Bank 1999). The Government of Karnataka has transferred the responsibility of maintenance of PWS and MWS schemes and handed over power to GP for operation and maintenance of drinking water supply[VII]. The Karnataka Panchayati Raj Act of 1993 provides powers to the Panchayats to provide drinking water. It must be noted that according to the Act the Gram Panchayats at village levels have every obligation to provide safe drinking water to the people. But due to lack of sufficient financial support at the GP level, the state shares maintenance cost along with the GP. Accordingly, finance required by the rural local bodies for augmentation, reconstruction and maintenance of water mainly comes from the grants and user charges. State or Union government give grant for this purpose. Under decentralized governance, Zilla Panchayats and Taluk Panchayats do not have tax base or power. They depend on grants for provision of service under various State and Central Schemes. The last tier of decentralized governance, the Gram Panchayat can levy user charges on water supply and can also levy water connection fee for individual household connections for maintenance of the existing systems at the GP level. Thus the GPs are expected to meet the

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[VII] PRAct section 58 (1), 77,78,82,85, and 86 makes GP to perform various functions including: Construction, repairs and maintenance of drinking water wells, tanks and ponds of GPs to make bye-laws regarding provisions of water supply: and maintaining water supply works either on its own or by annual contract by generating adequate resources.

operation and maintenance expenditure without adequate financial resources or adequate autonomy (World Bank, 1999).

Table 5.14: Expenditure on O & M in Karnataka (Rs in Lakhs)

Year	Total	Operation and Maintenance	
		Actual	Per cent
1993-94	8900	3138	35.26
1994-94	10052	4220	41.98
1995-96	13581	6494	47.82
1996-97	15056	6116	40.62
1997-98	19024	9773	51.37
1998-99	17999	11589	64.39
1999-00	37038	11081	29.92
2000-01	32845	10824	32.95
2001-02	31225	11245	36.01
2002-03	30693	11628	37.88

Source: RDPRD Document 2004

Table 5.14 provides the share of cost of operation, maintenance and total expenditure in Karnataka State. According to the table, 1/3rd of the total expenditure was incurred on operation and maintenance during 1993-94 and this has increased over the years and reached 64 per cent in 1998-99. But, again in the year 2002-03, the share of expenditure on operation and maintenance got reduced to at 1/3rd of the total expenditure incurred on water supply.

5.6: Conclusion

Water needs vary from household to household, and can also be affected by conditions specific to region, season, and other variables. Access to clean water and sanitation has become difficult with increasing population in Karnataka and also water scarcity is increasing in recent years. Water which was considered as a public good is now considered a priced good (Raju et.al. 2006). The objective of the programme of providing drinking water to all

habitations could not be achieved due to various reasons such as lack of sufficient funds and water sources. Water availability and accessibility is based on geographical location, and usage and is high in malnad regions compared to dry regions. The problem of providing drinking water and sanitation facility in the rural areas has been an arduous and complex challenge in Karnataka. Evolving appropriate systems, structures, and policies for effective water supply to rural areas has been adopted in different ways. Huge investments have been made for rural water supply under different programmes, **although progress seems visible, the target of achieving 55 lpcd is not yet achieved in 60 per cent of the villages.** Increasing costs of operation and maintenance are one of the major hurdles in the sustainability. The amount collected is not sufficient to meet the operation and maintenance charges. The Rural Development and Panchayat Raj Department has also taken up programmes on sanitation in rural areas. Many schemes have been implemented to provide sanitary facility in rural areas, but very less fund is utilised (around 50 per cent) for sanitation in Karnataka. The availability of toilet facility in rural areas clearly brings out the fact that rural areas have poor access to sanitary facility. More than 78 per cent of the rural households do not have any latrine facility. The provision of latrine facility requires individual efforts and awareness about sanitary schemes. Awareness and knowledge among the rural population about environmental hygiene and RWSS-related personal health issues are inadequate. Managing operation and maintenance of RWSS facilities should be further strengthened to facilitate regular and safe water to larger section of the rural population.

Appendix 5.1: Share of RWS Expenditure in Karnataka (Rs in Lakh)

Year	RWS Expenditure			Total Expenditure			Share of RWS Expenditure
	State	Center	Total	State	Center	Total	
1992-93	3642	2812	6454	203295	39048	242343	2.66
1993-94	5125	3816	8941	279654	45715	325369	2.75
1994-95	6026	4026	10052	297334	49511	346845	2.90
1995-96	7791	5791	13582	339084	39709	378793	3.59
1996-97	8279	6777	15056	397257	49102	446359	3.37
1997-98	9877	9147	19024	442448	50393	492841	3.86
1998-99	8527	9472	17999	564909	57257	622166	2.89
1999-00	25641	11397	37038	523135	119877	643012	5.76
2000-01	21001	10744	31745	735395	67741	803136	3.95
2001-02	20746	10479	31225	834755	81896	916651	3.41
2002-03@	19855	10838	30693	842062	90445	932507	3.29
2003-04 #	21165	11945	33110	997975	89086	1087061	3.05

Source: Annual Reports of RDPR, Economic Survey

Note: @ Revised estimates, #: Budgetary Expenditure

Appendix 5.2: district wise allocation and utilisation of funds through different Systems

Districts	Bore well/ Hand pump				Mini Water Supply				Piped Water Supply			
	2006-07		2007-08		2006-07		2007-08		2006-07		2007-08	
	Allocation	Percentage Utilised	Allocation	Percentage Utilised	Allocation	Percentage Utilised	Allocation	Percentage Utilised	Allocation	Percentage Utilised	Allocation	Percentage Utilised
Bangalore	112.20	248.53	112.20	105.84	208.20	13.52	208.20	198.13	442.41	29.73	442.41	118.67
Bangalore Rural	225.23	69.60	225.23	69.60	264.47	17.02	264.47	141.41	550.02	65.22	550.02	90.00
Chitradurga	104.78	54.33	104.78	337.28	140.68	223.99	140.68	226.76	310.88	38.46	310.88	173.70
Davangare	150.98	141.58	150.98	141.58	270.10	60.41	270.10	152.72	573.94	18.75	573.94	36.59
Kolar	332.48	43.92	332.40	43.69	742.76	38.64	742.76	103.60	681.55	136.84	681.55	114.45
Shimoga	96.53	53.85	96.53	175.18	168.81	56.67	168.81	221.55	358.71	20.00	358.71	117.09
Tumakur	330.00	36.75	330.00	113.71	844.05	12.00	844.05	115.34	765.25	18.75	765.25	88.21
Belgaum	266.48	134.36	266.48	106.52	264.47	529.78	264.47	322.34	884.82	21.62	884.82	125.45
Bijapur	132.00	33.13	132.00	97.16	146.30	11.54	146.30	203.01	514.15	20.93	514.15	192.55
Bagalkot	122.10	30.41	122.10	136.15	180.06	143.75	180.06	213.82	609.81	35.29	609.81	29.52
Dharwad	122.10	47.30	122.10	151.72	163.18	196.56	163.18	185.38	346.75	106.90	346.75	108.15
Gadag	113.85	83.34	113.85	141.52	168.81	13.33	168.81	211.78	358.71	153.33	358.71	62.72
Haveri	150.98	29.51	150.93	144.77	208.20	16.22	208.20	166.43	442.41	21.62	442.41	196.65
Uttarkannda	127.05	46.11	127.05	115.34	264.47	17.02	264.47	162.21	561.98	23.40	561.98	98.76
Bellary	117.98	83.22	117.98	140.51	157.56	11.85	157.56	157.08	609.81	82.35	609.81	118.07
Bidar	96.53	25.64	96.53	300.77	84.41	14.33	84.41	228.05	322.84	14.82	322.84	260.19
Gulabarga	216.98	30.42	216.98	126.08	236.33	99.24	236.33	190.83	801.12	68.66	801.12	95.49
Raichur	126.23	26.80	126.23	101.60	101.29	11.11	101.29	249.78	370.67	16.13	370.67	121.40
Koppal	117.15	26.76	117.15	174.39	101.29	16.67	101.29	314.94	358.71	16.67	358.71	104.54
Chikmagalur	101.48	32.52	101.48	153.83	225.08	11.00	225.08	171.05	466.32	20.51	466.32	112.58
Mangalore	84.98	28.16	84.98	196.63	382.64	16.18	382.64	140.86	550.02	19.56	550.02	106.36
Udupi	70.95	31.40	70.95	234.32	270.10	18.75	270.10	179.19	382.62	18.75	382.62	58.81
Hasan	136.13	361.20	136.13	164.00	270.10	218.75	270.10	193.45	382.62	115.63	382.62	164.65
Kodagu	33.00	112.52	33.00	187.12	61.90	9.10	61.90	310.99	131.53	27.27	131.53	136.85
Mandya	103.95	50.00	103.95	411.26	253.22	15.56	253.22	162.90	550.02	39.13	550.02	92.72
Mysore	84.15	25.49	84.15	152.41	180.06	15.63	180.06	177.16	382.62	18.75	382.62	125.45
Chamaraj Nagar	98.18	30.25	98.18	222.56	168.81	13.33	168.81	188.97	358.71	16.67	358.71	58.54
Karnataka	**3774.45**	**71.15**	**3774.32**	**150.85**	**6527.35**	**69.22**	**6527.35**	**172.22**	**13069.00**	**44.74**	**13069.00**	**110.53**

Appendix 5.3: Role of the Gram Panchayat in Rural Water Supply

Section 58 of Karnataka Panchayat Raj Act 1993 has enlarged the role of the Gram Panchayat in Water Supply

Schedule- I (Item VIII, XXXI) Item VIII

Drinking Water

1. Construction, repair and maintenance of drinking water wells, tanks and ponds.
2. Prevention and control of water pollution.
3. Maintenance of rural water supply scheme.

Section 77- Power for providing adequate and pure drinking water supply

Section 78 – Power of GPs to make bye-laws regarding provisions of water supply: Making bye-laws for conserving.

Section 82- Powers and duties with regard to sources of water supply.

Section 85- Power to prohibit use of water from sources.

Section 86- Penalty for using water for certain purposes.

Section 87- Abatement of nuisance from polluted water.

Appendix 5.4: Role of the Gram Panchayat in Rural Sanitation

The section 58 of Karnataka Panchayat Raj Act 1993 has enlarged the role of the Gram Panchayat in rural sanitation to identify the following among their mandatory functions:-

1. Providing sanitary latrines to not less than ten per cent of the households every year and achieve full coverage as early as possible.
2. Constructing adequate number of community latrines for the use of men and women and maintaining them.
3. Providing sanitation and proper drainage.
4. Earmarking places away from the dwelling houses for dumping refuse and manure.

Source: RDPRD Strategy paper; 2005

CHAPTER-6

ACCESSIBILITY AND FINANCING OF RURAL WATER SUPPLY AND SANITATION: EVIDENCES FROM DHARWAD DISTRICT

6.1: Introduction

The provision of safe water supply and sanitation to as many people as possible could result in reduction of water borne, water related and sanitary related diseases. The provision of water supply and sanitation from Gram Panchayat would facilitate improvement in living conditions of the rural poor, and encourage rural development, which could ultimately become the basis for economic development at large. A strong desire by the public for accessible water services and sanitation facility strengthens the political will to implement the scheme. Notably, with the realization of the importance of rural water supply and sanitation as the key to survival and prosperity of the people, no future argument is needed to make the Government put rural water supply and sanitation management at the top of their agenda[VIII].

The study of water supply and sanitation has been taken up by many economists in the last fifty or sixty years. In the state of Karnataka, much pioneering illuminating work is done in this area by Raju et al., Saleth and Sastri, Rajshekar et,al and Veershekarappa and Others[IX]. Earlier studies on water supply and sanitation in Karnataka have mainly concentrated on urban water supply, and rural water supply in Karnataka. However, there has been no study undertaken in the past on the role of the panchayat in drinking water

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[VIII] Edmund G. Wagner and J.N. Lanoix(1959): "Water Supply for Rural Areas and Small Communities" , WHO, Geneva, PP 41

[IX] a) K.V. Raju, S. Manasi, and Veershekarappa (2006): "*Perception and Politics: Grey Zones in Rural Water Supply*" edited by K.V.Raju "Elixir of Life", Published by Books for Change, Bangalore pp 173 -191.

b) D. Rajasekhar, Gagan Bihari Sahu, K.H. Anantha (2006): "Rural *and Urban Disparity in the Provision of Water Supply and Sanitation Services in Karnataka*", edited by K.V.Raju "Elixir of Life", Published by Books for Change, Bangalore pp 284 -301.

c) Maria Saleth .R. and Sastri G.S. (2004): "Water Supply and Sanitation Sector of Karnataka, India: Status, Performance and Change", Water Policy Issue No 6, 2004, pp 161-183

d) Veerashekharappa (2001): "Community Participation in Rural Drinking Water Supply and Sanitation: A Case Study of Karnataka", *Working Paper No. 91*, Institute for Social and Economic Change, Bangalore, Karnataka

supply and sanitation in rural areas, especially in northern Karnataka. There is an imperative need to study rural water supply and sanitation. An enquiry into the rural water supply and sanitation would help to formulate suitable water supply and sanitation schemes for rural communities in Dharwad district as well as other districts in the state. This chapter presents an analysis of water supply and sanitation situation in the selected district, taluk, and Gram Panchayats with a brief profile of district, taluk, and Gram Panchayats.

6.2: Scenario of Dharwad District

6.2.1: District Profiles

Dharwad district has been selected for the micro-level study from amongst 29 districts in Karnataka. The district of Dharwad is located in the north-western part of the state of Karnataka. Before reorganisation of the State in the year 1956, it was a part of the erstwhile Bombay state. The district is bounded by Belgaum district on the north, Haveri district on the south, Gadag district on the east, and Uttar Kannada district on the west. The district is situated about 400 km from the State capital Bengaluru. Prior to framing of two new districts in 1997, the Dharwad district had Gadag and Haveri districts in its fold with 17 Taluks. At present, the district consists of five taluks, with a total geographical area of 4263 sq. km. The total number of households (HH) in the district is 2,97,494. Table 6.1 shows the total population of the district which is about 1,604,253, out of which the male and female population is 823,204 and 781,049, respectively. The share of urban population to the total population for the state is 35 per cent, but in Dharwad, the percentage is 56 per cent as Hubli-Dharwad city is emerging as growth center. This is a special feature of Dharwad district.

The sex ratio of the district is 949 and the density of population is 376 persons per sq. km. The Scheduled Caste (SC) and Scheduled Tribe (ST) population of the district is 131,969 and 70,442, which works out to 8.2 and 4.4 per cent of the population respectively, as compared to the corresponding state

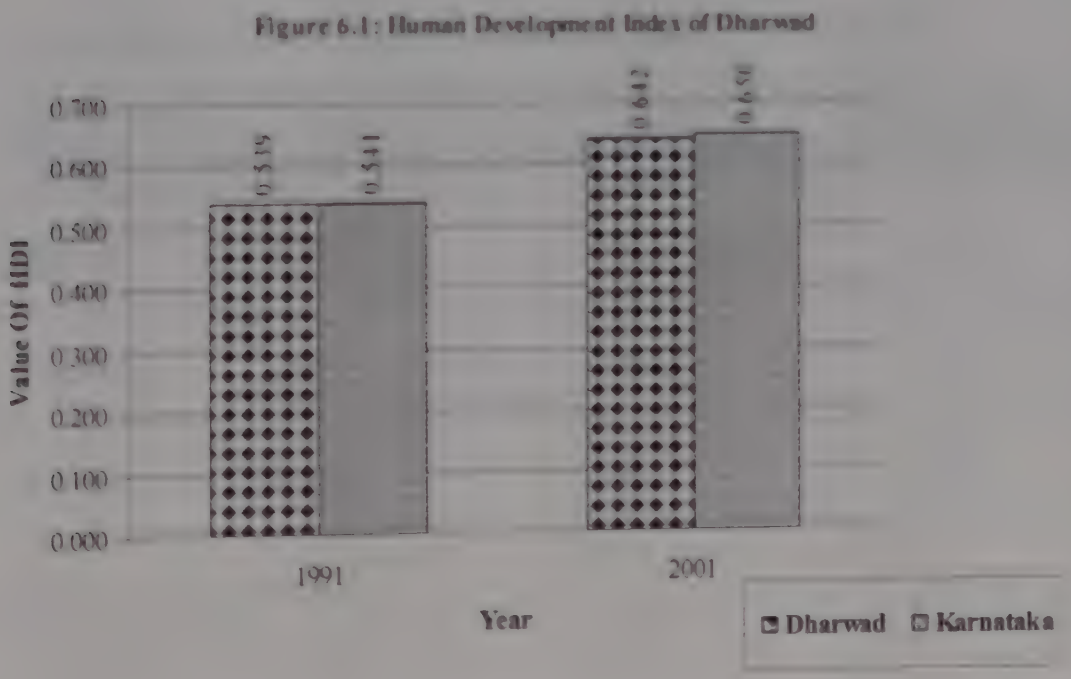
average of 16.2 and 6.6 per cent. The per capita income of the district was Rs. 24,369 as compared to the corresponding figure of Rs. 30,847 for the state in 2006-07.

Table 6.1: Demographical Details of Dharwad District

Items	No. HH	Total Population			SC Population			ST Population		
		Persons	Male	Female	Persons	Male	Female	Persons	Male	Female
Rural	130692	722336	371275	351061	54681	27776	26905	44201	22818	21383
Urban	166802	881917	451929	429988	77288	39231	38057	26241	13416	12825
Total	297494	1604253	823204	781049	131969	67007	64962	70442	36234	34208
Rural (%)	43.93	45.03	45.10	44.95	41.43	41.45	41.42	62.75	62.97	62.51
Urban (%)	56.07	54.97	54.90	55.05	58.57	58.55	58.58	37.25	37.03	37.49

Source: Census 2001

Figure 6.1 illustrates the Human Development Index in Dharwad district as compared with other districts of Karnataka. The value of Human Development Index (HDI) for the district was 0.539 in 1991, which increased to 0.642 in 2001, showing a decadal improvement of 20 per cent, compared to 0.541 and 0.650 for the state of Karnataka in 1991 and 2001 respectively. The HDI value of district is closer to the state level value.



Source: Karnataka Human Development Report, 2005

The literacy rate of the district shows steady progress (62.7 % in 1991 and 71.6% in 2001) over the years. The district has a higher literacy rate than state literacy rate during 1991 and 2001 census (see Table 6.2).

Table 6.2: Literacy Rate of Dharwad District and Karnataka (in per cent)

Items	Dharwad		Karnataka	
	1991	2001	1991	2001
Male	74.2	80.8	67.2	76.1
Female	50.4	61.9	44.3	56.9
Persons	62.7	71.6	56.0	66.6

Source: Census 2001

Table 6.3 presents distribution of workers in Dharwad district; wherein 36.6 per cent of the people are main workers and 6.1 per cent are marginal workers. Fifty seven per cent of the people got registered as non-workers. Overall 23.6 per cent of women in Dharwad taluk were engaged in the main and marginal occupations. The contribution of the male member to the economy is higher than the female. About forty four per cent male worker and 71.4 per cent of women were under non-workers category in the district as per 2001 census.

Table 6.3: Distribution of the Workers in Rural Dharwad

Items	Main Worker	Marginal Worker	Non Worker
Male	53.3	3.8	44.0
Female	20.1	3.5	71.4
Person	36.6	6.1	57.3

Source: Census 2001

Table 6.4 shows that agriculture is the main occupation in Dharwad district. The percentage of cultivators to total workers as per 2001 census is 26.25 per cent, and agricultural labour force constitutes 27.07 per cent. Totally 53.32 per cent of work force was engaged in the agriculture sector. Dharwad district is not an industrially developed district. The information about working force is noted below.

Table 6.4: Distribution of the Total Workers

Items	Cultivators	Agricultural Labour	Household Workers	Other Services	Total Workers
Male	124034 (26.78)	74920 (16.18)	11618 (2.51)	252509 (54.53)	463081 (100)
Female	55843 (25.14)	110589 (49.79)	7705 (3.47)	47973 (21.60)	222110 (100)
Total	179877 (26.25)	185509 (27.07)	19323 (2.82)	300482 (43.85)	685191 (100)

Source: Census 2001

6.2.2 Taluk Profiles

According to Najundappa High Power Committee Report (2002), as many as 60 per cent of the taluks and 40 per cent of the constituencies coming under this region are backward constituencies, showing that Northern Karnataka region has more backward taluks and constituencies than southern Karnataka. In Dharwad district out of five taluks, three have been identified by this committee as backward taluks, while remaining two are characterized as 'Medium Developed'.

Table 6.5: Backward and Developed Taluks in Dharwad District

Backward Taluk	Medium /Relatively Developed Taluk
Navalgund	Hubli
Kundagol	Dharwad
Kalaghatagi	

Source: *Center for Multidisciplinary Development Research (2002). Regional Development Board in Karnataka: An Evaluation. High Power Committee for Redressal of Regional Imbalance (Accompaniment-2) Government of Karnataka.*

Table 6.5 depicts backward and developed taluks in Dharwad district. As shown in the table Dharwad taluk is one of the relatively developed taluks in the district and Kalaghatagi is most backward taluk in the district. Dharwad and Kalaghatagi taluks have been selected for the study purpose.

6.2.2A. Dharwad Taluk

This taluk has a warm climate, with a temperature during summer around 35 C ranging between 12.8 C and 15.6 C in western parts of the taluk. We can find two types of soils, black and red soils, in the study area. Villages in malenadu have red soil whereas the villages in maidan area have black type soil. The taluk roughly lies between longitudes of 74°45" to 75°15"C east. The Poona-Bangalore (PB Road), a national highway, passes through this block and a southern railway also runs through this block. The total geographical area of the taluk is 111,788 hectares. Around 72 per cent of the land is under cultivation. The area under forest is around 12 per cent. This is far below the standard percentage (which is 33%).

Table 6.6: Demographical Details of Dharwad and Kalaghatagi Taluks

Name	Area	No_HH	Total Population			SC Population			ST Population		
			Population	Male	Female	Population	Male	Female	Population	Male	Female
Dharwad	Rural	3624600	202671	103941	98730	12118	6129	5989	13673	6995	6678
	Urban	289200	16290	8298	7992	961	461	500	254	124	130
	Total	3913800	218961	112239	106722	13079	6590	6489	13927	7119	6808
	Rural (%)	92.61	92.56	92.61	92.51	92.65	93.00	92.29	98.18	98.26	98.09
	Urban (%)	7.39	7.44	7.39	7.49	7.35	7.00	7.71	1.82	1.74	1.91
Kalghatagi	Rural	2246000	122336	63294	59042	12138	6170	5968	6873	3641	3232
	Urban	283700	14680	7486	7194	2658	1331	1327	399	213	186
	Total	2529700	137016	70780	66236	14796	7501	7295	7272	3854	3418
	Rural (%)	88.79	89.29	89.42	89.14	82.04	82.26	81.81	94.51	94.47	94.56
	Urban (%)	11.21	10.71	10.58	10.86	17.96	17.74	18.19	5.49	5.53	5.44

Source: Census of India-2001

Table 6.6 shows that, according to 2001 census, Dharwad Taluk has 92.61 per cent of households living in rural areas and 7.39 per cent of households living in urban areas. The total population of the taluk was 2, 18,961, out of which the males and females accounted for 92.6% and 92.5% respectively. According to 2001 census the taluk has 6% SC population and 6.36% ST population.

Table 6.7: Distribution of the Workers in Dharwad and Kalaghatagi Taluks

Items	Dharwad			Kalaghatagi		
	Main Worker	Marginal Worker	Non Worker	Main Worker	Marginal Worker	Non Worker
Male	56.0	3.7	49.2	56.6	6.3	37.1
Female	29.7	11.5	45.2	28.4	19.8	51.8
Person	43.3	7.5	51.7	43.0	12.8	44.2

Source: Census of India-2001

Table 6.7 depicts that around 59.7 per cent of the labourforce are male workers in rural Dharwad Taluk. In this, 43.3 per cent of them are in the main occupation and 7.5 per cent are marginal workers. Fifty one per cent of the people are non-workers. Overall 41.2 per cent of women in Dharwad taluk were engaged in main and minor occupation according to 2001 census.

Profile of the Selected Gram Panchayats in Dharwad Taluk

6.2.2A.i. Yarikoppa GP

Yarikoppa Gram Panchayat (GP) is situated in Dharwad taluk, about 10 km far from the Dharwad city, and Yarikoppa village is headquarter of GP. According to 2001 census the geographical area of GP is 1170 acres and the total number of households accounted for 625. Three villages are incorporated in this GP, namely, Yarikoppa, Kanavihonnahalli and Nayakanahulikatti. The

Lingayat community is dominant (about 60 %) in the GP. Other communities like Muslim, SCs and STs constitute a minor part of the population in the GP.

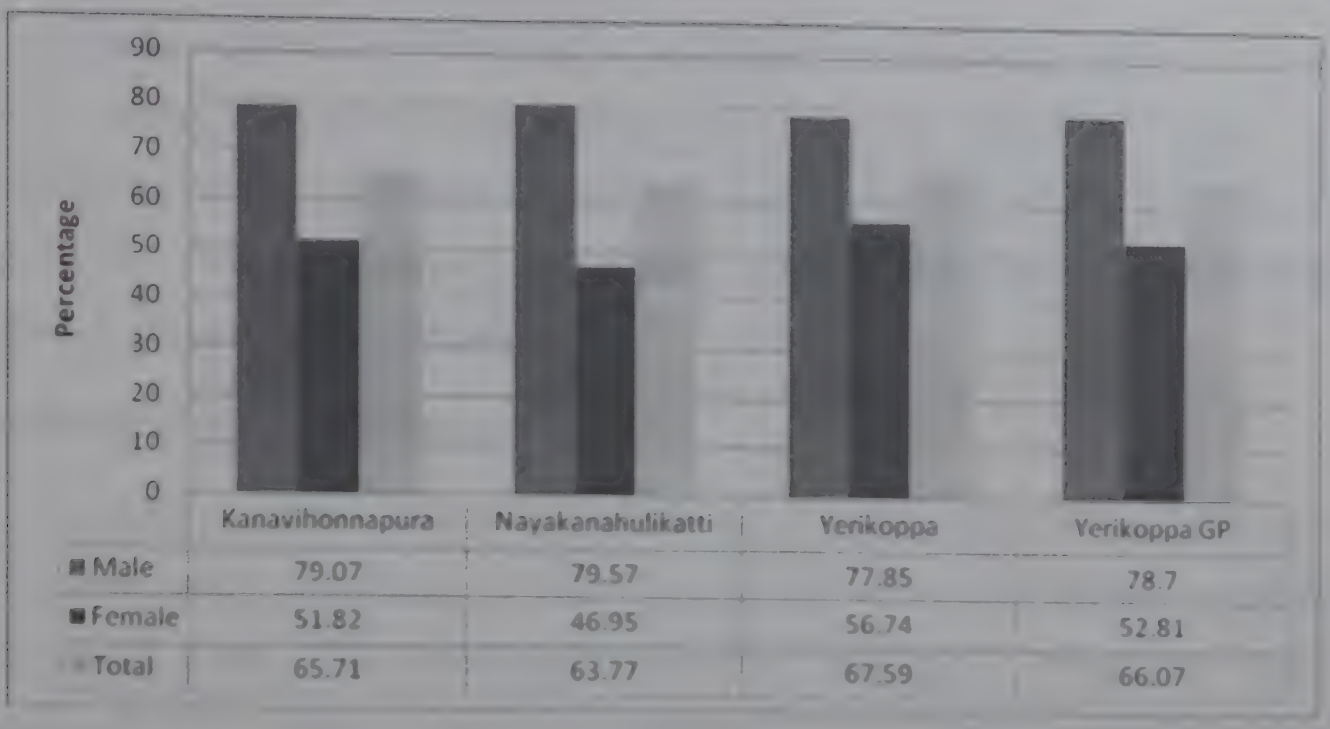
a. Demographical Information

Table 6.8 shows demographical details of the selected GPs. The total population of the all villages of the Yarikoppa GP is 3,670. GP has about 50.46 per cent (1852) male population and 49.54 per cent (1,818) female population. The Kanavihonnahalli village is highly populated (1,651) as compared to the other villages of the panchayat viz. Yarikoppa (1,350) and Nayakanahulikatti (660). The sex ratio of female is highest in Kanavihonnapura and Nayakanahulikatti village with 50.2 per cent and 50.30 per cent respectively. The Yarikoppa village headquarter of GP has less sex ratio with 935 for 1000 males as compared to other two villages.

b. Educational Information

Education plays a significant role in the progress of the society. There is a need to create awareness among the rural people to opt for education and by that they can help in the progress of their society. Figure 6.2 depicts educational information of selected GPs. The literacy of the Yarikoppa GP is 66.07 per cent (less than the Dharwad district literacy rate of 71.6 %). The Yerikoppa village (with GP headquarter) has the highest literacy rate (67.59 %) compared to other two villages (Kanavihonnapura 65.71 % and Nayakanahulikatti has 63.77 % literacy rate). The reason for the higher rate of literates in the GP headquarter (Yarikoppa village) is that this is the only village were a high school exists in the GP and there is easy access of transport to Dharwad city. As compared to male literacy rate (78.70 %) female literacy rate (52.81 %) is less in the GP.

Figure 6.2: Literacy Rate of Yarikoppa GP



	Kanavihonnapura	Nayakanahulikatti	Yerikoppa	Yerikoppa GP
Male	79.07	79.57	77.85	78.7
Female	51.82	46.95	56.74	52.81
Total	65.71	63.77	67.59	66.07

Source: Census of India-2001

*c. **Livelihood Opportunity***

Table 6.9 gives a brief picture about the occupational or the livelihood pattern of the Yarikoppa GP along with different category workers for each village. The total workforce of the GP is around 61.66 per cent. The Nayakanahulikatti village has the highest total workforce (70.76 %) than the other two villages. The female workers (56.60 per cent) are less than the male workers (66.63%) at the GP.

Table 6.10 gives details of, people working in sub sectors. The main source of the income to the people is agriculture, so around 41 per cent of people are working as cultivators and also about 24.22 per cent of people are working as agricultural labourers. Kanavihonnapur (49.40%) and Nayakanahulikatti (62.96) villages have more cultivators compared to Yarikaopp village (19.70% cultivators). The existence of Nirasagara tank flowing near to Nayakanahulikkatti and Kanavihonnapur villages is the main reason for these two villages, having more number of cultivators.

6.2.2A.ii Kanakur GP

Kanakur GP is situated about 14 km from the Dharwad city and it is one of the most backward GPs among 137 GPs in Dharwad Taluk. The geographical area of Kanakur GP is 4,627 acre, and total households of this GP are 1,011. This GP includes 5 villages, namely Kavalgeri, Chandanmatti, Kanakur, Talwai, and Vanahalli.

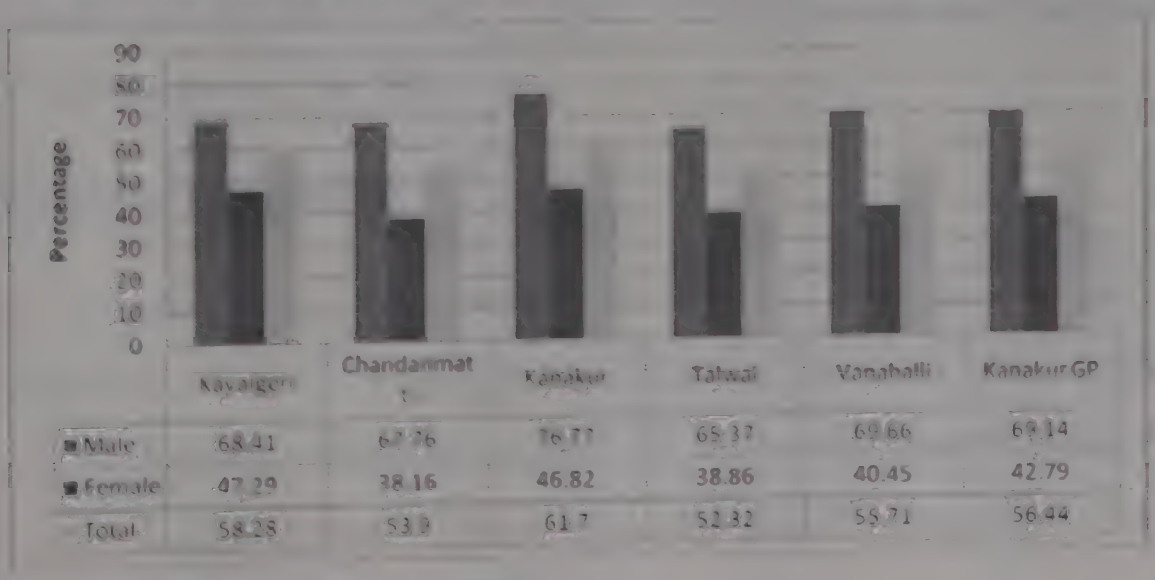
a. Demographical Information

According to 2001 census the population of the Kanakur GP is 5,931 out of which the male population is 3,057 (51.54 per cent) and females are 2,874 (48.46 per cent). The Kavalageri village has the highest population (1.866) among all five villages in the GP (see table 6.8). The total SC population of the GP is 263 (4.43 per cent) and ST population of the GP is 82 (1.3per cent). The Kanakur village has the highest sex ratio in the GP.

b. Educational Information

In the Kanakur panchayat each village has an anganawadi and lower primary school (up to 5th Standard). If students want to continue their study (higher primary and high school), they have to come to Dharwad city (13 km from GP) or Hebballi village (6 km from GP). Figure 6.3 shows literacy rate of the Kanakur GP which is only 56.44 per cent (it is too less than the literacy rate of Dharwad taluk). The male literacy rate is 61.14 per cent and female literacy rate is 42.29 per cent in the entire GP.

Figure 6.3: Literacy Rate of Kanakur GP



Source: Census of India-2001

c. Livelihood Opportunity

Table 6.9 shows that, about 3,151 people (53.13 %) are working in different sectors in the Kanakur GP. About 57.25 per cent of people are working as main workers and 7.62 per cent of people are working as marginal workers in the Kanakur GP. About 42.15 per cent of people are working as cultivators and 39.10 per cent of people are working as agricultural labourers in the all five villages in the GP.

6.2.2B. Kalaghatagi Taluk

The western belt covers Kalaghatagi Taluk, dominated by low hill ranges. Monsoon forest areas are seen in this area, hence periodic grazing induces small temporary settlements at places right inside such tracts (the forest coverage in the Kalaghatgi Taluk is about 19,526 hectares). South of Kalaghatagi, the Sahyadrian region narrows down to a small belt, disappearing into the limits of Uttar Kannada district. The total number of households in Kalaghatagi taluk is 25,297. Total population of the taluk is 137,016, out of which males and females are 70,780 and 66,236 respectively. The total SC population of the taluk is 14,796 and ST population of the taluk is 7,272.

6.2.2B. i Madakihonnihalli

Madakihonnihalli GP has been selected as a developed GP in the Kalaghatagi taluk based on the Gram Panchayat development index. This GP is located near to Kalagatagi city (3 km from city) and Madakihonnihalli village is headquarter of the GP.

a. Demographical information

As presented in the table 6.8 the total population of the Madakihonnihalli GP is 3259 with a population of 1653 (50.72%) males and 1606 (49.28 %) females. Madakihonnihalli village has a higher population than the other two villages. About 4.36 per cent (142 people) Scheduled caste and

6.78 per cent (221 population) Schedule tribe people are living in selected five villages of the GP.

b. Educational Information

All villages have an anganawadi and primary school in the GP, while none of the village has higher primary and high school. Students come to Kalaghatagi to continue their education. Figure 6.4 shows the literacy rates in Madakihonnihalli GP. About 60 per cent of the people are literate in the GP. The Madakihonnihalli village has the highest (63.79 %) literacy rate compared to the other two villages of the GP. The GP has a female literacy rate of only 47.47 per cent, which is less than the male literacy rate (72.19 %).

Figure 6.4: Literacy Rate of Madakihonnihalli GP

Male	72.28	74.06	67.99	72.19
Female	41.15	52.71	44.16	47.47
Total	57.11	63.79	56.28	60.2

Source: Census of India-2001

c. Livelihood Opportunity

Table 6.9 gives a brief picture about the occupational or the livelihood pattern of the Madakihonnihalli Gram Panchayat, along with different heads of worker details of each village in Madakihonnihalli. About 60 per cent population is employed in the GP. Hindasagiri village has the highest total workforce (63.49 %) than the other two villages. The female workforce is less (55.60 %) than male workforce (65.52 %) in the GP.

Table 6.10 shows people engaged in sub occupations in the GP. The main source of income to the people is agriculture, so around 50 per cent are working as cultivators and also about 32 per cent are working as agricultural labourers. Hindasgeri (78 %) village is having more cultivators than Sangadevarkoppa (43 %) and Madakihonnihalli (39 %) villages.

6.2.2B. ii Galagi GP

This GP is located 25 km from Kalagatagi and 32 km from Dharwad city. Galagi village is the headquarter of the GP and is attached to Hulikoppa village, so people and some office records refer to it as Galagi Panchayat. Four villages are covered by this Galagi GP, namely Galagi, Hulikoppa, Karlakoppa and Hasarambi. Karlakoppa village has five households with a population of 25. The geographical area of Galagi Panchayat is 3651 acre and about 1293 households are living in this GP.

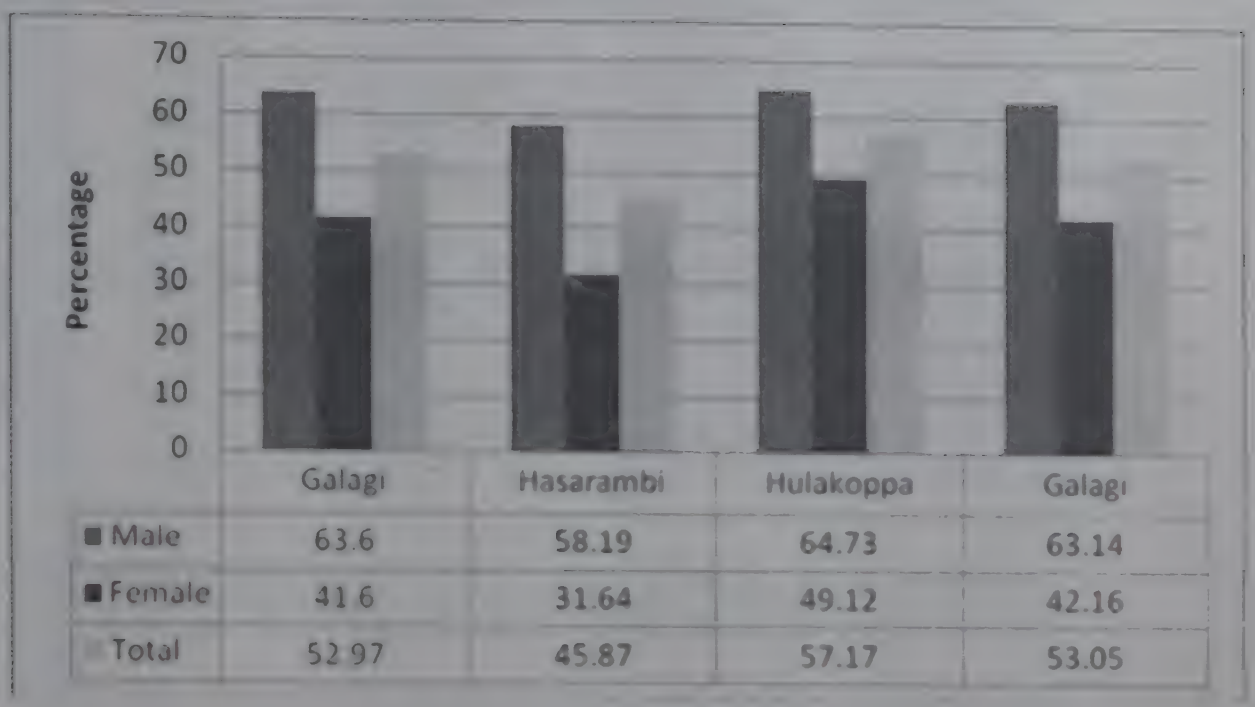
a. Demographical information

The total population of the GP is 6,967 with a population of 3.628 (52.07 %) and 3,339 (47.93 per cent) males and females respectively. The SC population of the GP is 467 (6.70 %) and ST population is 75 (1.08%) in the GP. The Galagi village has a larger population than that of other two villages.

b. Educational Information

Figure 6.5 shows literacy rates of Galagi GP. Male literacy rate is 63.04 per cent and female literacy rate is 42.16 per cent. The Hasarambi village has the lowest literacy rate (45.87 %) in the GP. The GP headquarter, Galagi has an anganawadi, primary school, high school, and a college.

Figure 6.5: Literacy Rate of Galagi GP



Source: Census of India-2001

c. Livelihood/ Occupations

Table 6.9 shows that agriculture is the foremost economic activity in Galagi GP. About 50.14 per cent of the workforce is engaged in cultivation and about 30.39 per cent are working as agricultural labourers in the GP. The total workforce varies across the villages in the GP. The Hasarambi village has the highest workforce than the other two villages in Galagi GP. On an average the population includes 48.99 per cent main workers and 6.37 per cent marginal workers and about 44.64 per cent of non workers in all villages of the GP.

Table 6.8: Demographical Information of the Selected Gram Panchayats

Taluk Name	GP Name	Village Name	Population					SC Population		ST Population	
			Person	Male	Female	Male per cent	Female per cent	SC	SC per cent	ST	ST per cent
Dharwad	Kanakur	Kavalgeri	1866	964	902	51.66	48.34	17	0.91	7	0.38
		Chandanmatti	1127	595	532	52.80	47.20	76	6.74	30	2.66
		Kanakur	744	371	373	49.87	50.13	72	9.68	13	1.75
		Talwai	860	436	424	50.70	49.30	7	0.81	0	0.00
		Vanahalli	1334	691	643	51.80	48.20	91	6.82	32	2.40
		Grand Total of GP	5931	3057	2874	51.54	48.46	263	4.43	82	1.38
	Yerikoppa	Kanavihonnapura	1659	826	833	49.79	50.21	211	12.72	493	29.72
		Nayakanahulikatti	660	328	332	49.70	50.30	53	8.03	126	19.09
		Yerikoppa	1351	698	653	51.67	48.33	155	11.47	123	9.10
		Grand Total of GP	3670	1852	1818	50.46	49.54	419	11.42	742	20.22
Kalaghatagi	Galagi	Galagi	4345	2258	2087	51.97	48.03	393	9.04	56	1.29
		Hasarambi	933	499	434	53.48	46.52	21	2.25	19	2.04
		Hulakoppa	1689	871	818	51.57	48.43	53	3.14	0	0.00
		Grand Total of GP	6967	3628	3339	52.07	47.93	467	6.70	75	1.08
	Madkihonnihalli	Sangedevarkoppa	920	467	453	50.76	49.24	36	3.91	25	2.72
		Madkihonnihalli	1583	807	776	50.98	49.02	45	2.84	107	6.76
		Hindasgeri	756	379	377	50.13	49.87	61	8.07	89	11.77
		Grand Total of GP	3259	1653	1606	50.72	49.28	142	4.36	221	6.78

Source: Census of India-2001

Table 6.9: Livelihood Opportunity in Selected GPs (in per cent)

Taluk Name	GP Name	Village Name	Total Worker			Main Worker			Marginal Worker			Non Worker		
			Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Dharwad	Kanakur	Kavalgeri	63.90	48.23	56.32	60.27	36.59	48.82	3.63	11.64	7.50	36.10	51.77	43.68
		Chandanmatti	62.86	49.44	56.52	60.00	46.43	53.59	2.86	3.01	2.93	37.14	50.56	43.48
		Kanakur	56.06	19.57	37.77	53.91	18.77	36.29	2.16	0.80	1.48	43.94	80.43	62.23
		Talwai	60.55	44.10	52.44	53.67	17.45	35.81	6.88	26.65	16.63	39.45	55.90	47.56
		Vanahalli	56.58	52.88	54.80	54.70	35.46	45.43	1.88	17.42	9.37	43.42	47.12	45.20
		Grand Total of GP	60.61	45.16	53.13	57.25	33.02	45.51	3.37	12.14	7.62	39.39	54.84	46.87
	Yerikoppa	Kanavihonnapura	68.77	50.90	59.80	61.14	42.02	51.54	7.63	8.88	8.26	31.23	49.10	40.20
		Nayakanahulikatti	73.48	68.07	70.76	57.93	10.24	33.94	15.55	57.83	36.82	26.52	31.93	29.24
		Yerikoppa	60.89	58.04	59.51	59.89	46.40	53.37	1.00	11.64	6.14	39.11	41.96	40.49
		Grand Total of GP	66.63	56.60	61.66	60.10	37.79	49.05	6.53	18.81	12.62	33.37	43.40	38.34
Kalaghatagi	Galagi	Galagi	62.53	41.30	52.34	59.61	36.85	48.68	2.92	4.46	3.66	37.47	58.70	47.66
		Hasarambi	71.94	65.90	69.13	61.72	38.94	51.13	10.22	26.96	18.01	28.06	34.10	30.87
		Hulakoppa	64.75	45.72	55.54	60.05	36.43	48.61	4.71	9.29	6.93	35.25	54.28	44.46
		Grand Total of GP	64.36	45.58	55.36	60.01	37.02	48.99	4.36	8.57	6.37	35.64	54.42	44.64
	Madkihonnihalli	Sangedevarkoppa	66.17	59.38	62.83	57.39	38.19	47.93	8.78	21.19	14.89	33.83	40.62	37.17
		Madkihonnihalli	63.44	52.32	57.99	58.12	33.38	45.99	5.33	18.94	12.00	36.56	47.68	42.01
		Hindasgeri	69.13	57.82	63.49	63.59	36.60	50.13	5.54	21.22	13.36	30.87	42.18	36.51
		Grand Total of GP	65.52	55.60	60.63	59.17	35.49	47.50	6.35	20.11	13.13	34.48	44.40	39.37

Source: Census of India-2001

Table 6.10: Details of Main and Marginal Worker in Selected GPs (in per cent)

Taluk Name	GP Name	Village Name	In percentage				
			Cultivators	Agriculture Labour	Household Workers	Other Services	Total
Dharwad	Kanakur	Kavalgeri	38.73	44.43	2.66	14.18	100.00
		Chandanmatti	37.21	36.89	3.92	21.98	100.00
		Kanakur	46.62	27.76	1.42	24.20	100.00
		Talwai	38.80	48.34	5.10	7.76	100.00
		Vanahalli	51.71	32.01	0.82	15.46	100.00
		Grand Total of GP	42.15	39.10	2.73	16.03	100.00
	Yerikoppa	Kanavihonnapura	49.40	12.30	0.71	37.60	100.00
		Nayakanahulikatti	62.96	16.27	0.64	20.13	100.00
		Yerikoppa	19.78	43.53	3.36	33.33	100.00
		Grand Total of GP	41.67	24.22	1.63	32.48	100.00
Kalaghatagi	Galagi	Galagi	49.25	29.90	6.42	14.42	100.00
		Hasarambi	58.91	33.02	0.47	7.60	100.00
		Hulakoppa	54.48	29.74	2.03	13.75	100.00
		Grand Total of GP	52.14	30.39	4.36	13.12	100.00
	Madkihonnihalli	Sangedevarkoppa	43.08	37.54	4.15	15.22	100.00
		Madkihonnihalli	39.32	36.38	1.63	22.66	100.00
		Hindasgeri	78.13	18.54	0.21	3.13	100.00
		Grand Total of GP	49.85	32.39	2.02	15.74	100.00

Source: Census of India-2001

6.3: Accessibility to Water Supply in Dharwad District

6.3.1. Accessibility to Water Supply

There are many fundamental rights of citizens in the constitution. Access to clean drinking water is one fundamental right as enunciated in the right to life under Article 21 of the Constitution of India judgments delivered in December 2000 (Ramachandraiah, C. 2001). The centrally sponsored Minimum Needs Programme and the Accelerated Rural Water Programme have increased access to safe water sources within 1.6 km and the desired quantity of water per day at least 40 liters per person. Almost 95 per cent of the rural population is reported to have at least one source of domestic water that meets the national standards (Dijk and Sijbesma, 2006). Therefore, the Government of Karnataka aims at providing 55 liters per capita per day (lpcd) to the rural inhabitations. The norms also prescribe water quality standard that is free from bacterial and chemical contamination and specify that the distance of availability of water to be within 500 meters from the place of residence.

The availability and requirement of drinking water and selected details pertaining to drinking water in respect of Dharwad district and selected taluks are given in table 6.11. It shows that about 48 per cent of rural habitations are not getting sufficient water in Dharwad district. All rural habitations received more than 30 LPCD water in the selected two taluks during the year 2008.

Table 6.11: LPCD norms according to the RDPRD

Items	2008			2003		
	Dharwad	Kalghatagi	District Total	Dharwad	Kalghatagi	District Total
Total no of Villages	119	93	371	119	93	371
0-30	0 (0.0)	0 (0.0)	0 (0.0)	13 (10.9)	22 (23.7)	75 (20.2)
31-40	9 (7.6)	10 (10.7)	53 (14.3)	32 (26.9)	14 (15.0)	98 (26.4)
41-55	33 (27.73)	30 (32.3)	125 (33.7)	32 (26.9)	25 (26.9)	99 (26.7)
55& Above	77 (64.71)	53 (57.0)	193 (52.0)	42 (35.3)	32 (34.4)	99 (26.7)

Source: ZP Annual Reports

Note: Figure is parentheses are percentage to respective total

6.3.2: Source of Water

Dharwad district depends mainly (about 90 per cent) on ground water resources for water supply in rural areas, with water supplied in the villages through piped water supply schemes, mini water schemes, and bore well with hand pumps. Table 6.12 presents different public water sources in rural areas of Dharwad district. About 75.91 per cent of the sources include hand pump/borewell, while 11.66 per cent and 12.43 per cent include mini water supply and piped water supply respectively in the year 2008. In the last five years (in 2003), the percentage share of hand pump/bore well sources has slightly reduced and mini water supply and piped water supply sources have increased in rural areas of Dharwad district. The hand pumps/borewells sources were more in Kalaghatagi taluk (79 %) than Dharwad taluk (75 %) in the year 2008. There is a slight increase in the share of mini water supply and piped water supply in two taluks during the period 2003 to 2008.

Table 6.12: The Public Water Sources in Dharwad District

Water Sources	2008			2003		
	Dharwad	Kalghatagi	Total	Dharwad	Kalghatagi	Total
Piped Water Supply	129 (11.61)	84 (9.61)	421 (12.43)	97 (10.42)	73 (9.38)	313 (10.82)
Mini Water Supply	141 (12.69)	99 (11.33)	395 (11.66)	118 (12.67)	75 (9.64)	304 (10.50)
Hand pump/ Bore Well	841 (75.70)	691 (79.06)	2572 (75.91)	716 (76.91)	630 (80.98)	2277 (78.68)
Total	1111 (100)	874 (100)	3388 (100)	931 (100)	778 (100)	2894 (100)

Source: ZP Annual Reports

Note: Figure is parentheses are percentage to respective total

6.3.3: Result from the Primary Survey

The survey undertaken at the micro level confirms the picture emerging at the taluk level and district level. A majority of the households depend on modern sources (public sources like MWS, PWS and Handpump/Borewell) for water supply. Result in Table 6.13 shows that all households (except one household) depend on public sources in Yarikoppa GP and more than 86 per cent households use modern water sources for washing and bathing purposes. About 22 per cent of households depend on traditional sources (especially lake and well) in the Galagi GP.

Table 6.13: Details about Rural Water Sources

GP Name	Drinking water		Cooking		Washing/Bathing		Total
	Modern	Traditional	Modern	Traditional	Modern	Traditional	
Galagi	101 (100.0)	-	101 (100)	-	78 (77.2)	23 (22.8)	101 (100)
Madakihonnihalli	48 (100.0)	-	48 (100)	-	42 (87.5)	6 (12.5)	48 (100)
Yarikoppa	45 (97.8)	1 (2.2)	46 (100)	-	42 (91.3)	4 (8.7)	46 (100)
Kanakur	40 (100.0)	-	40 (100)	-	40 (100)	-	40 (100)
Total of GPs	234 (99.6)	1 (0.4)	235 (100)	-	202 (86.0)	33 (14.0)	235 (100)

Note: Figure is parentheses are percentage to respective total

6.3.4: Drinking Water from the public source by Distance

The distance separating the households from their public sources of drinking water is an important indicator of the level of living of the household members. According to NSSO 54[@] round (1998), about 38.6 per cent of households had access to principle sources. Table 6.14 shows the number and percentage distribution of households in study area by these public sources for various stretches of distance between the households and public sources. Table shows that more than 30 per cent of the households are getting drinking water within their premises or dwelling and about 56.6 per cent of the households are collecting water from outside their dwelling but within their premises. Only about 11 per cent are collecting water outside the limits covering a distance less than 0.25 Km.

Table 6.14: Distance of Dwelling from DWS in Normal Days*

GP Name	Within premises /dwelling	Outside dwelling but within premises	Outside premises at distance <0.25 km	Distance 0.25 km to 0.50 km	Distance 0.50 km to 1 km	Total
Galagi	28 (27.7)	62 (61.4)	8 (7.9)	2 (2.0)	1 (1.0)	101 (100)
Madkihonnihalli	15 (31.3)	28 (58.3)	5 (10.4)			48 (100)
Kanakur	15 (32.6)	24 (52.2)	6 (13.0)	1 (2.2)		46 (100)
Yarikoppa	13 (32.5)	19 (47.5)	7 (17.5)	1 (2.5)		40 (100)
Total	71 (30.2)	133 (56.6)	26 (11.1)	4 (1.7)	1 (0.4)	235 (100)

*Normal days are excluding summer season

The water supply varies from one season to another season in rural areas. For instance, accessibility of water is better in rainy season than the summer season. This study also compares water accessibility in normal season and summer season. Table 6.15 reveals the distance covered by households in collecting drinking water from public sources during the summer season. In the summer season, 61.3 per cent of households collect drinking water outside their premises covering distance of less than 0.25 km. whereas households reporting collection of water outside i.e. within 0.25 km is only 11.1 per cent in summer season. In the Galagi GP, about 73.3 per cent of households walk outside their premises and go upto 0.25 km to collect water in the summer season. This survey result shows that a majority of households had to walk less in the normal season than the summer season to collect water. The Yarikoppa GP is having only one mini water supply system in every street. Therefore, people have to walk 0.25 km to 0.5 km in the summer season to collect drinking water.

Table 6.15: Distance of Dwelling from Public Water Source in Summer Season

GP Name	Within dwelling	Outside dwelling but within premises	Outside premises at distance <0. 25 km	distance 0.25 km to 0.50 km	distance 0.50 km to 1 km	Total
Galagi	7 (6.9)	10 (9.9)	74 (73.3)	8 (7.9)	2 (2.0)	101 (100)
Madkihonnihalli	4 (8.3)	15 (31.3)	29 (60.4)			48 (100)
Kanakur	4 (8.7)	10 (21.7)	31 (67.4)	1 (2.2)		46 (100)
Yarikoppa	11 (27.5)	9 (22.5)	10 (25.0)	9 (22.5)	1 (2.5)	40 (100)
Total	26 (11.1)	44 (18.7)	144 (61.3)	18 (7.7)	3 (1.3)	235 (100)

Note: Figure is parentheses are percentage to respective total

6.3.5: Time Spent for Collection of drinking Water

An opportunity cost is involved in collecting water from public sources like PWS, MWS and borewells in terms of depriving people's time for productive activities and leisure. Table 6.16 depicts that women in most of the rural households take the burden of collecting water (about 85.1 per cent). Hence, more time is spent on collecting water which implies more burden on women. The contribution of male in collecting water is 37.5 per cent in Yarikoppa and 26.1 per cent in Kanakur Gram Panchayat, which is higher as compared to other two Gram Panchayats.

Table 6.16: Collection of Water Daily from the Sources

GP Name	Male	Female	Total
Galagi	4 (4.0)	97 (96.0)	101 (100)
Madkihonnihalli	4 (8.3)	44 (91.7)	48 (100)
Kanakur	12 (26.1)	34 (73.9)	46 (100)
Yarikoppa	15 (37.5)	25 (62.5)	40 (100)
Total	35 (14.9)	200 (85.1)	235 (100)

Note: Figure is parentheses are percentage to respective total

Table 6.17 presents the distribution of households stratified by time spent in fetching water. The survey results show that about 51 per cent households spend 5 to 15 minutes to collect water in the normal season. The households having their own water tap or source within the premises spent less than 5 minutes (48.1 per cent households) to collect water. In Galagi and Madakihonnihalli GPs the households spent more time to collect drinking water than the households in Kanakur and Yarikoppa GPs.

Table 6.17: Walking Time for Collecting the Water at Source in Normal Day

GP Name	Less than 5 min	5 to 15 min	15 to 30 min	Total
Galagi	45 (44.6)	54 (53.3)	2 (2.0)	101 (100)
Madkihonnihalli	22 (45.8)	26 (54.2)		48 (100)
Kanakur	23 (50.0)	23 (50.0)		46 (100)
Yarikoppa	23 (57.5)	17 (42.5)		40 (100)
Total	113 (48.1)	120 (51.0)	2 (0.9)	235 (100)

Note: Figure is parentheses are percentage to respective total

The time spent to collect water in summer season varies from the time spent in the normal season. Table 6.18 shows that more than 72.8 per cent of households spend 15 to 30 minutes to collect water in summer season. The households in Gram Panchayat of Kalaghatagi taluk spend more time for the collecting water than the households in Gram Panchayat in Dharwad taluk. About 91 per cent of households spend more than 15 minutes in the summer season to collect water in Galagi GP.

Table 6.18: Walking Time for Collecting the Water at Source in Summer Season

GP Name	less than 5 min	5 to 15 min	15 to 30 min	30 min to 1 hour	More than 1 hour	Total
Galagi		9 (8.9)	86 (85.1)	6 (5.9)		101 (100)
Madkihonnihalli	6 (12.5)	10 (20.8)	30 (62.5)	2 (2.1)	1 (2.1)	48 (100)
Kanakur	7 (15.2)	10 (21.7)	29 (63.0)			46 (100)
Yarikoppa	6 (15.0)	8 (20.0)	26 (65.0)			40 (100)
Total	19 (8.1)	37 (15.7)	171 (72.8)	7 (3.0)	1 (0.4)	235 (100)

Table 6.19 shows the percentage of households according to waiting time to collect the water. Around 54.5 per cent of the rural households wait for 5 to 15 minutes to collect the water. Those who have their own tap spend less than 5 minutes to collect water. Many rural households face problems of irregular supply (depending on electricity and waterman availability) of drinking water from the GP.

Table 6.19: Households' Waiting Time in Collecting Water

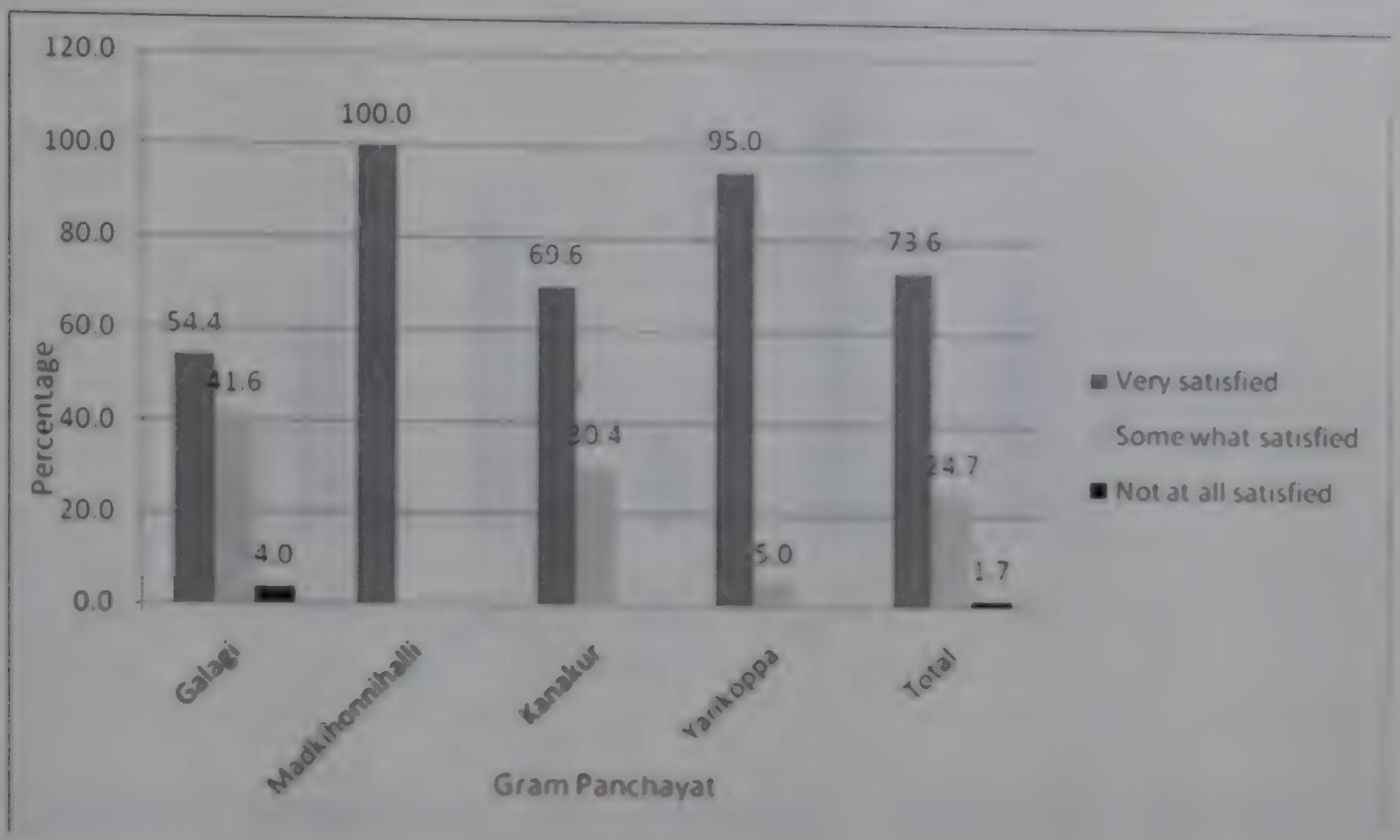
GP Name	less than 5 min	5 to 15 min	15 to 30 min	30 min to 1 hour	Total
Galagi	36 (35.6)	58 (57.8)	6 (5.9)	1 (1.0)	101 (100)
Madkihonnihalli	16 (33.3)	32 (66.7)			48 (100)
Kanakur	25 (54.3)	21 (45.7)			46 (100)
Yarikoppa	23 (57.5)	17 (42.5)			40 (100)
Total	100 (42.6)	128 (54.5)	6 (2.6)	1 (0.4)	235 (100)

Note: Figure is parentheses are percentage to respective total

6.3.6: People's Perception on Adequate and Accessible Water Supply

The above tables explain about the various public water sources and their distances from the dwelling units, as well as the time spent in collecting water in rural areas. Now the question that arises is whether the amount of water available to a household from its public sources is sufficient to meet the needs of all the households in the rural area? Adequacy, in this context, refers to people's opinion on whether availability of water is sufficient or insufficient. Regarding this, the researcher has enquired about people's satisfaction with the adequate of water supply. The opinions of the people on satisfaction varied between taluks and even between households within a GP. Figure 6.6 shows households' opinions about the adequacy of water supply. More than 73 per cent of the households are satisfied with the their access to drinking water supply. In developed Gram Panchayats like Yarikoppa (95%) and Madakihonnihalli (100%) people are more satisfied than the backwards Gram Panachayats (Kanakur (69.6%), and Galagi GP (54.4%).

Figure 6.6: Distribution of Households According to Satisfaction with Access to Water Supply in the Selected GPs



6.4: Quality of Water Supply

The quality of the available water is another major problem faced by the drinking water sector in the state. According to the NSSO report on Drinking Water and Sanitation (1999) in Karnataka, 97.2 per cent of the households reported that they were getting satisfactory quality of water. However, this is not the scenario at the empirical level. Percentage of households having a satisfactory quality of drinking water in rural areas provided by public water supply sources is given in Figure 6.7. Only about 51.5 per cent of households reported receiving water with satisfactory quality. The households in the developed GPs like Yarikoppa (90%) and Madikihonnihalli (64.5%) appear to be more satisfied about quality of water than the backward GPs (Galagi 43.6% and Kanakur 21.7%). None of the household's is satisfied with water quality in one of the selected village (Hasarambi village) in Galagi GP. As reported by village leaders, people have complained to the GP regarding the quality of the water and also about the waterman, but so far no change had taken place in this regard.

Figure 6.7: Distribution of Households According to Satisfaction with Quality of Water

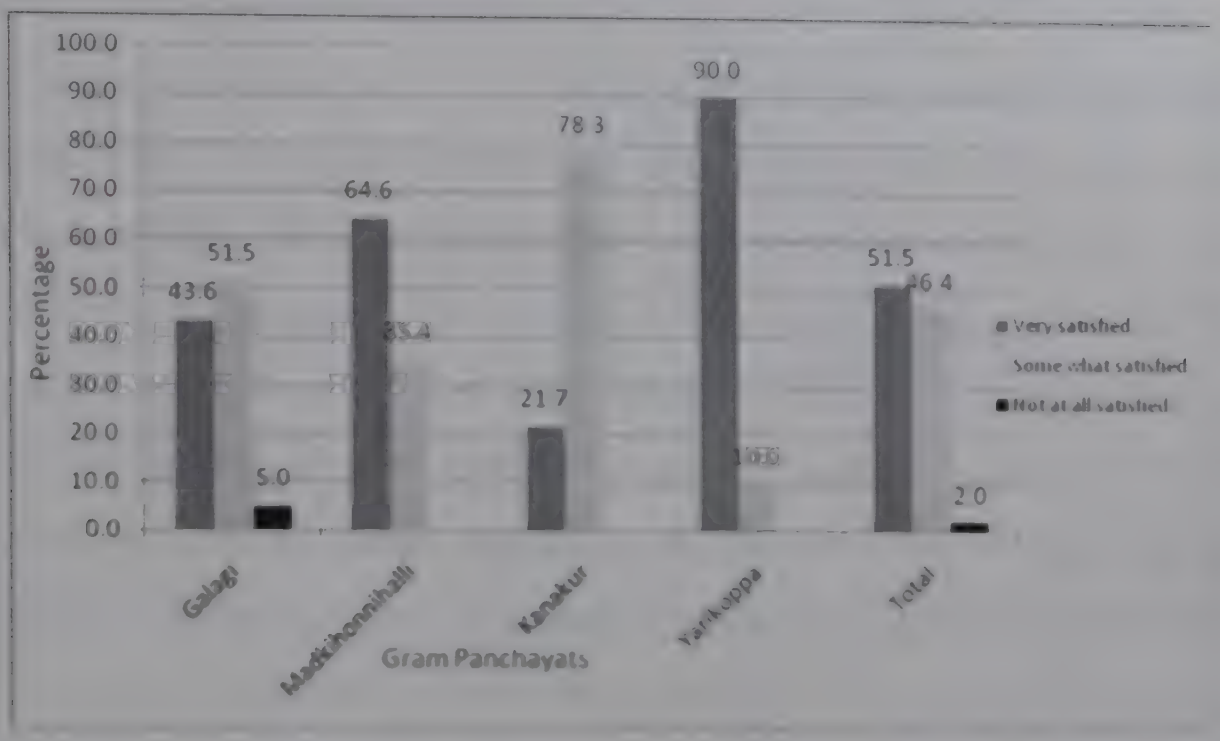


Table 6.20: Distribution of Households According Reasons of Dissatisfaction with Water Quality

GP Name	Known to be polluted	Clean but contains excess of iron or other mineral	Bad taste due to unknown causes	Total
Galagi	54 (94.7)	1 (1.8)	2 (3.5)	57 (100)
Madkihonnihalli	12 (70.6)	5 (29.4)	-	17 (100)
Kanakur	19 (52.8)	12 (33.3)	5 (13.9)	36 (100)
Yarikoppa	-	3 (75.0)	1 (25.0)	4 (100)
Total	85 (74.6)	21 (18.4)	8 (7.0)	114 (100)

Note: Figure is parentheses are percentage to respective total

Among the 4 GPs, 49.5 per cent of households are not very satisfied with the drinking water made available for various reasons, the breakup of which is given in Table 6.20. About 93 percent households know that they are getting

polluted water or containing excess of iron and other mineral. So households know that water is polluted and is not treated well in rural areas. This speaks about their low awareness and little concern for health. Table 6.21 presents the fact that more than 80 per cent of the households are not using treated water in rural areas. The Galagi GP households have higher level of concern about water treatment than the other selected GPs, and therefore are treating water. In Hasarambi village of Galagi GP, people always faced water quality problems and therefore were worried about their health problems. On account of this many of the households are treating water frequently. Inspite of frequent complaints, officers of Gram Panchayat do not visit the village regularly. Secondly, the waterman who is recruited from the GP to provide water daily to the village always neglects to clean the water tank. The reason for not using treated water is that they think fluoride water would be tastier. Since they are used to drinking fluoride water they lack awareness about its effects and drink any type of water that is available in rural areas. In Yarikoppa GP of Dharwad taluk, most of the households opined that they are getting good quality water, and households in Kanakur GP opined that quality of water is not good even though most of households (95.7 %) are not treating water.

Figure 6.8: Satisfaction with Adequate of Water Supply, Quality of Water Supply and Sanitation Facilities by Social Groups

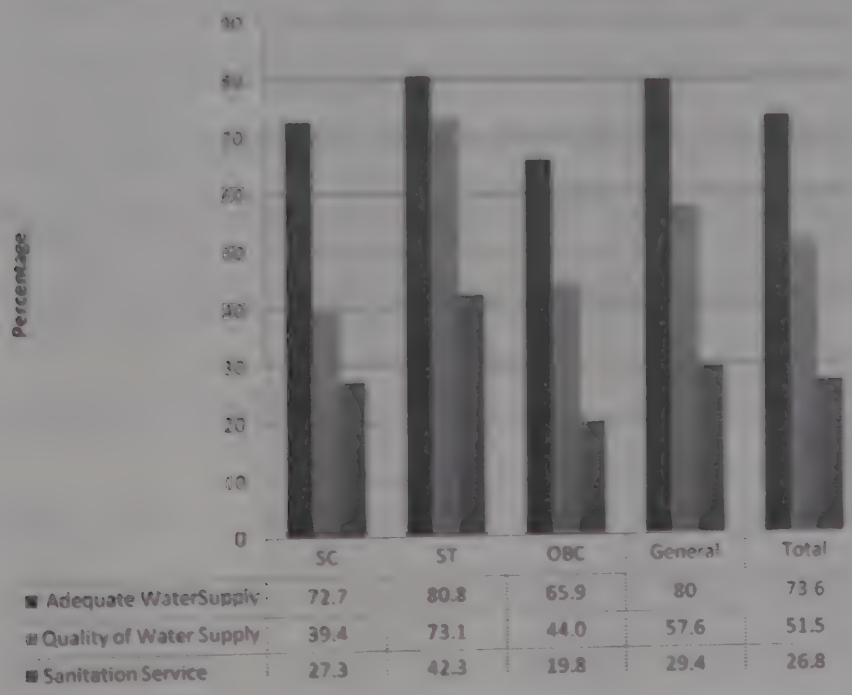


Figure 6.8 shows perception of households on provision of rural water supply and sanitation according to different social groups. Although the satisfaction rates particularly for the quality of water supply are higher for the STs and general groups, major difference is observed between the groups with reference to sanitation services.

Table 6.21: Usage of Water Treatment

GP Name	Filtering/plain clothes	Boiling of water	Not treatment	Total
Galagi	28 (27.7)	8 (7.9)	65 (64.4)	101 (100)
Madkihonnihalli	6 (12.5)	1 (2.1)	41 (85.4)	48 (100)
Kanakur	1 (2.2)	1 (2.2)	44 (95.7)	46 (100)
Yarikoppa	-	-	40 (100.0)	40 (100)
Total	35 (14.9)	10 (4.3)	190 (80.9)	235 (100)

Note: Figure is parentheses are percentage to respective total

6.5: Rural Sanitation Facility

Rural sanitation is also a good indicator of development of GPs. Accessibility of latrine facility, drainage and garbage disposal in rural areas is less than that in urban areas. Many economists (Bijlani and Rao (1990); Saleth and Sastry (2004); Veershekarappa 2006) studied rural sanitation facilities and found that less than 20 per cent households have latrine facilities in rural areas, which is far less than the urban area (75% households have latrine facility).

6.5.1: Individual Latrine Facility

A preliminary idea of the extent to which households have access to latrine facility in the selected GPs can be seen from the table below. Under the section 1 (Act 29 of 1997), one of the important functions of the GP is to provide latrines to not less than ten per cent of the households every year.

Table 6.22: Gram Panchayats having Individual Latrine

GP Name	No of Households	No of Villages	No of Individuals Latrine	% of Individuals Latrines
Galagi	1313	3	220	16.76
Madakihonnihalli	612	3	56	9.15
Yarikopp*	625	3	340	54.40
Kanakur	1011	5	210	20.77
Total of GPs	3561	14	826	23.20

- Most of them are not using latrines

Table 6.22 shows the details of the number of individual latrine facilities in the selected GPs. About 23 per cent households have individual latrine facilities in the selected GPs. Out of this, Dharwad taluk GPs have higher coverage of latrine facility as compared to the GPs of Kalaghatagi taluk. The Yarikoppa GP has the highest individual latrine (54.40 %) facility among other GPs. About 21 per cent of households have been covered by individual latrine facility in the Kanakur GP; which received money under the swacha gram scheme for three villages in the year 2005-06. One of the villages (Kavalageri) has utilised swacha gram scheme properly and constructed around 150 individual latrines under this scheme (with a subsidy of Rs 3500). The other two villages (including GP headquarter, Kanakur) have not utilised the funds so far. According to Kanakur GP secretary, the fund have not been utilised because people do not cooperate in construction of drainage and latrine.

Researcher's observation: The government is providing (under TSC scheme) Rs 1500 contributory amount to whoever is interested in constructing individual latrine, so the Secretary, President and other members of Yerikoppa Panchayat decided to build latrines for not less than ten per cent of households every year and achieved a coverage of 54 per cent in the GP. However, interestingly, though Yarikoppa Gram Panchayat officially covered 54 per cent of households, very few households are using that facility because the GP fixed a septic tank and constructed low height walls. Therefore, majority of the households destroyed the latrine and used bricks for different purposes. This shows the lack of awareness and importance attached to sanitation in rural areas. Further, there is lack of transparency, accountability and monitoring of Gram Panchayats activities in the rural areas.

About 16.76 per cent of households have individual latrine facilities in Galagi GP, in which Gram Panchayat also has a high school and college facility. According to the bill collector of this GP, the Galagi and Hulikoppa villages have highly educated people and therefore more households have latrine facilities as compared to the villages with less educated people. The Madakihonnihalli GP lacks latrine facility compared to other selected GPs.

Table 6.23: Sanitary Facility in Selected Households

GP Name	Yes	No	Total
Galagi	8 (7.9)	93 (92.1)	101 (100)
Madkihonnihalli	12 (25.0)	36 (75.0)	48 (100)
Kanakur	17 (37.0)	29 (63.0)	46 (100)
Yarikoppa	13 (32.5)	27 (67.5)	40 (100)
Total	50 (21.5)	185 (78.5)	235 (100)

Note: Figure is parentheses are percentage to respective total

As already observed, coverage of sanitary facility is very low 23.30 (Table 6.22). Table 6.23 shows the sanitation facilities in the selected households. The table indicates that only 21.3 per cent of rural households are covered with latrine facility in selected villages. The GPs in backward taluk (Kalaghatagi) have fewer latrine facilities as compared to the GPs in developed taluk (Dharwad). Among all GPs, the Galagi Gram Panchayat has fewer latrine facilities than the other GPs. One of the villages (Hasarambi) does not have any latrine facilities among the selected sample households from Galagi GP.

6.5.2. Types of Latrine in Selected Households

Table 6.23 explains types of latrine in the selected households in the GPs. Only about 21.3 per cent (Septic tank 20.4 % and Pour flush pit 0.9 %) of rural households reported using latrine facility, which is higher than the district average (19%). Households, not having any latrine facility and using open area account for about 78 per cent. According to the survey. Kanakur GP has highest (37%) individual latrine facility among all the other GPs. One of the villages, Kavalageri, which received the Swaccha Gram Scheme and constructed around 150 household latrine facilities in the village. is part of this sample study. This is also one of reason Kanakur GP has the higher number of latrine facilities among all GPs. Galagi GP has only 7.9 % individual latrine facilities which is the lowest among other GPs. In developed GPs like Madakihonnihalli and Yarikoppa GPs 32.5 per cent and 25.0 per cent of the households, respectively have individual latrines.

Table 6.24: Types of Latrine

GP Name	Septic tank	Pour flush pit	Open Access	Total
Galagi	7 (6.9)	1 (1.0)	93 (93.1)	101 (100)
Madkihonnihalli	12 (25.0)		36 (75.0)	48 (100)
Kanakur	16 (34.8)	1 (2.2)	29 (63.0)	46 (100)
Yarikoppa	13 (32.5)		27 (67.5)	40 (100)
Total	48 (20.4)	2 (0.9)	185 (78.7)	235 (100)

Note: Figure is parentheses are percentage to respective total

Households using Latrine facility

Table 6.23 shows that around 50 (21%) rural households have a latrine facility, although some rural households are not using them. Rural people often find it very convenient to defecate in the open fields. It is usual for them to carry a small tin of water, which hardly suffices for proper cleaning. Table 6.25 reveals that only 66.0 per cent of households are using latrine facility and it indicating poor awareness and negligence for personal hygiene and public health.

Table 6.25: Distribution of Households According to Use of Latrine Facility

GP Name	Yes	No	Total
Galagi	7 (87.5)	1 (12.5)	8 (100)
Madkihonnihalli	9 (75.0)	3 (25.0)	12 (100)
Kanakur	11 (64.7)	6 (35.3)	17 (100)
Yarikoppa	6 (46.2)	7 (53.8)	13 (100)
Total	33 (66.0)	17 (34.0)	50 (100)

Note: Figure is parentheses are percentage to respective total

Reasons for Households not having Latrine

The above tables show rural households with latrine facilities and the different types of latrine facilities in rural areas. As discussed earlier more than 78 per cent of rural households do not have latrine facilities (Table 6.23) because of many reasons. Table 6.26 presents the reasons for not having latrine facilities. The major reason (more than 96%) for not constructing latrine is due to economic problem and scarcity of place. Only one per cent of households (in Galagi GP) said that due to scarcity of water they could not have latrine facility. A few other reasons include bad smell, staying in a rented house, or lack of interest in constructing latrine.

Table 6.26: Reasons for not having a Latrine

GP Name	Economic Problem	Scarcity of Place	Scarcity of Water	Other Problems*	Total
Galagi	64 (68.8)	26 (28.0)	2 (2.2)	1 (1.1)	93 (100)
Madkihonnihalli	31 (86.1)	4 (11.1)	-	1 (2.8)	36 (100)
Kanakur	24 (82.8)	4 (13.8)	-	1 (3.4)	29 (100)
Yarikoppa	22 (81.5)	4 (14.8)	-	1 (3.7)	27 (100)
Total	141 (76.2)	38 (20.5)	2 (1.1)	4 (2.2)	185 (100)

- Because of bad smell, rented house, not interest to construct a latrine

6.5.3: Distance and Time Spent in going for Open Defecation

Rural households are not only spending their valuable time to collect the water, but are also spending time by going out for defecation (if they do not have an individual latrine facility). Majority of rural households (especially adult women) opine that going out for latrine is very difficult in rainy season. Table 6.27 gives details about distance walked by villagers from their house to use open areas. About 53 per cent of household members walked from 0.25 km to 0.50 km to go for open defecation, and around 14 per cent of household members walked 0.50 km to 1 km in the selected areas. About 21 per cent of household members go for open defecation covering a distance of 0.50 km to 1km in Galagi GP.

Table 6.27: Distance from the House to Open Defecation

Distance / GP Name	Outside dwelling but within premises	Outside premises at distance less than 0.25 km	0.25 km to 0.50 km	0.50 km to 1 km	1 km to 1.5 km	More than 1.5 km	Total
Galagi	-	14 (14.7)	60 (63.2)	20 (21.1)	1 (1.1)	-	95 (100)
Madkihonnihalli	-	27 (67.5)	9 (22.5)	2 (5.0)	2 (5.0)	-	40 (100)
Kanakur	-	10 (29.4)	21 (61.8)	2 (5.9)	1 (2.9)	-	34 (100)
Yarikoppa	1 (2.9)	8 (23.5)	19 (55.9)	5 (14.7)	-	1 (2.9)	34 (100)
All GPs	1 (0.5)	59 (29.1)	109 (53.7)	29 (14.3)	4 (2.0)	1 (0.5)	203 (100)

Note: Figure is parentheses are percentage to respective total

Time spent to go for Open Defecation

Table 6.28 shows that household members have to spend a lot of time to go for open defecation. Except for Madakinonnihalli GP, two third of rural households spend more than 15 to 30 minutes daily to go to open access latrine in the selected GPs. In the Madakihonnihalli GP, majority of the rural households go to latrine outside their premises covering a distance of less than 0.25 km.

Table 6.28: Time Required to go for Open Defecation

GPs Name	Less than 5 min	5 to 15 min	15 to 30 min	30 min to 1 hour	More than 1 hour	Total
Galagi	-	14 (14.7)	70 (73.7)	11 (11.6)	-	95 (100)
Madkihonnihalli	-	27 (67.5)	11 (27.5)	2 (5.0)	-	40 (100)
Kanakur	-	10 (29.4)	24 (67.6)	-	1 (2.9)	34 (100)
Yarikoppa	1 (2.9)	9 (26.5)	20 (58.8)	4 (11.8)	-	34 (100)
All GPs	1 (0.5)	60 (29.6)	124 (61.1)	17 (8.4)	1 (0.5)	203 (100)

Note: Figure is parentheses are percentage to respective total

6.5.4: Children (Below 6 years old) using Latrine Facility

Tables (6.27 and 6.28) explain about dependence of adults on open fields for defecation and time spent on account of this. Here, researcher has examined about the children's sanitation facility in rural areas in selected GPs. Sanitation related illnesses affect young children heavily, not only because of their lower immunity to pathogens, but also because of their carelessness for hygiene. This means that they are more likely to come into contact with excreta, the primary cause of diarrhoeal disease and intestinal parasites, as well as other pathogens. A study conducted by UNICEF's India office found that only one per cent of children below the age group six-use latrine[X] (UN-HABITAT, 2003). As presented in table 6.29 none of the children use latrines in rural households from selected GPs. Usually rural children go for open defecation nearby their houses. Researcher has collected data, **which shows that 97 per cent of the children go outside their dwelling but within the premises for open defecation.**

Table 6.29: Children (Below Six Year Old) Using Latrine Facility

GPs Name	Outside dwelling but within premises	Outside premises at distance <0.25 km	Total
Galagi	29 (100)	-	29 (100)
Madkihonnihalli	11 (100)	-	11 (100)
Kanakur	6 (85.7)	1 (14.3)	7 (100)
Yarikoppa	5 (83.3)	1 (16.7)	6 (100)
Total	51 (96.2)	2 (3.8)	53 (100)

Note: Figure is parentheses are percentage to respective total

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[X] UN-HABITAT (2003): "***Water and Sanitation in the Worlds Cities: Local action for Global Goals***" , United Nations Human Settlements Programme (UN-HABITAT) published by Earthscan publication Ltd, Landon PP: 77

6.5.5: School Latrine Facility in Rural Areas:-

The construction of school buildings, provision of infrastructure facilities, teachers' salaries, and other maintenance all come under the Department of Education in Karnataka State. But, construct on of adequate number of school latrine facilities (separate for Boys and Girls) and maintaining them comes under the Gram Panchayat in rural area. The GP receives funds from the ZP for constructing latrine facilities for school within GP premises. Table 6.30 shows the absolute number of schools and latrine facility for students: out of 15 Anganawadi schools, only 10 Anganawadi schools have latrine facility in the selected GPs. The Galagi GP does not have latrine facility because of scarcity of place in Anganawadi School. Only Yarikoppa GP has covered all the Anaganawadi with latrine facilities. In terms of primary school latrine facilities, except Galagi (out of three primary schools only two primary schools are having latrine facility); the other three selected GPs have latrine facility in primary schools. Only two GPs (Galagi and Yarikoppa) have a high school facility. Galagi GP high school is not having a latrine facility because of scarcity of place and because of the location of the school near a temple.

Table 6.30: School Latrine Facility (in Number)

GP Name	No of Villages	No of Anganawadi	Anganawadi Toilets	No of Primary School	Latrine Facility in Primary School	No of High School	Latrine Facility in High School
Galagi	3	3	0	3	2	1	
Madakihonnihalli	3	4	3	3	3		
Yarikoppa	3	3	3	3	3	1	1
Kanakur	5	5	4	5	5		
Total	14	15	10	14	13	2	1

Note: Figure is parentheses are percentage to respective total

6.5.6: Community Latrine Facility

This study also focused on community latrine facilities. Community latrines are useful for those who are facing scarcity of place and have too little income to construct latrines. Table 6.31 shows the number of GPs with community latrine facility; only Kanakur GP has received grant for community latrine facility among the four GPs. The Kanakur GP constructed community latrine facility 5 years ago, but due to lack of maintenance by the GP rural households are not using the latrine now. Other GPs have also received grants for community and women's latrine; however, because of the scarcity of place, GPs are sending money back to Taluk Panchayat.

Table 6.31: Community Latrine Facility in Selected GPs

GP Name	Community Latrine
Galagi	-
Madakihonnihalli	-
Yarikoppa	-
Kanakur	1*
Total	1

* Households not using latrine

6.5.7: Sufficient Water for Latrine

Access to water for drinking and other domestic uses as well as having the means to dispose of human excreta and other waste largely determines the quality of living environment. Sanitation is closely linked to the availability of water. Often scarcity of water results in low sanitation levels. A greater per capita usage of water demands more sanitation and sewerage facilities (Ratna Reddy and Mahendra Dev: 2006). The insufficient supply of water prevents rural households in using latrines frequently. Table 6.32 depicts responses on sufficiency of water for latrines, with about 38 per cent of rural households reporting insufficient supply of water in selected GPs. In the Galagi and Yarikoppa GPs more than 76 per cent, households opined that they are getting sufficient water for latrines. Overall, 38 per cent of rural households have insufficient supply water for latrines.

Table 6.32: Sufficient Water for Latrine

GP Name	Yes	No	Total
Galagi	6 (75.0)	2 (25.0)	8 (100)
Madkihonnihalli	6 (50.0)	6 (50.0)	12 (100)
Kanakur	11 (64.7)	6 (35.3)	17 (100)
Yarikoppa	10 (76.9)	3 (23.1)	13 (100)
Total	31 (62.0)	19 (38.0)	50 (100)

Note: Figure is parentheses are percentage to respective total

6.5.8. Drainage Provision for Waste Water

Drainage provisio is also a part of village sanitation facility. It has been observed from the field that inadequate drainage and waste collection pose problems for rural people, especially for children, who tend to play wherever

there is open land or may be drawn to playing in standing water and in drainage ditches or to look for something in plenty of garbage. However, Gram Panchayats have constructed the drainage facility under various schemes (namely SGRY, Swacha Gram Yojana) for carrying wastewater away from the premises of households as well as villages. Table 6.33 shows that only 56.2 per cent rural households have drainage facilities in selected GPs. The Kanakur panchayat (backward GP) has the lowest (13%) drainage arrangement among four GPs. Kanakur GP has received Swatch Gram Scheme from the government even though the funds have not been utilised properly. According to Secretary of Kanakur GP, because of politicians and people's unwillingness to construct drainage in the village, funds have not been utilised. Another backward GP Galagi has the larger coverage of (77.2%) drainage facility in the selected GP as opined by households. The Madkihonnihalli and Yarikoppa GPs the two developed GPs, have utilised 47.9 per cent and 62.5 per cent of funds respectively.

Table 6.33: Drainage Facility

GP Name	Yes	No	Total
Galagi	78 (77.2)	23 (22.8)	101 (100)
Madkihonnihalli	23 (47.9)	25 (52.1)	48 (100)
Kanakur	6 (13.0)	40 (87.0)	46 (100)
Yarikoppa	25 (62.5)	15 (37.5)	40 (100)
Total	132 (56.2)	103 (43.8)	235 (100)

Note: Figure is parentheses are percentage to respective total

Types of Drainage

The researcher has looked into the types of drainage facility used by rural households in the selected GPs. Table 6.34 presents types of drainage arrangements for the flow of wastewater. From the table we can see that more than 65 per cent rural households (who have drainage facility) have open pucca drainage facilities in the selected GPs. The Yarikoppa GP has the highest open pucca drainage and Madakihonnihalli GP has the lowest open pucca drainage in selected GPs. Only 3 per cent of rural households have pucca or modern drainage facility in the selected GPs.

Table 6.34: Type of Drainage Arrangement for Wastewater

GPs name	Open Kachacha	Open Pucca	Covered Pucca	Total
Galagi	23 (29.5)	53 (67.9)	2 (2.6)	78 (100)
Madkihonnihalli	14 (60.9)	7 (30.4)	2 (8.7)	23 (100)
Kanakur	2 (33.3)	4 (66.7)		6 (100)
Yarikoppa	2 (8.0)	23 (92.0)		25 (100)
Total	41 (31.1)	87 (65.9)	4 (3.0)	132 (100)

Note: Figure is parentheses are percentage to respective total

6.5.9: Removal of household's garbage

The proportion of households reporting removal of their household waste by different modes are presented in Table 6.35. It is seen from the table that most of the households (86.4%) are dumping garbage to make their own compost because of the amount of agriculture land. If they do not have cultivated land, they sell this compost to other farmers and earn some money. There is no street bin (except Yarikoppa GP) in selected GPs. Some households

(10.6%) dump garbage in public open place especially in backward GPs like Galagi and Kanakur GP.

Table 6.35: Place of Dumping Garbage

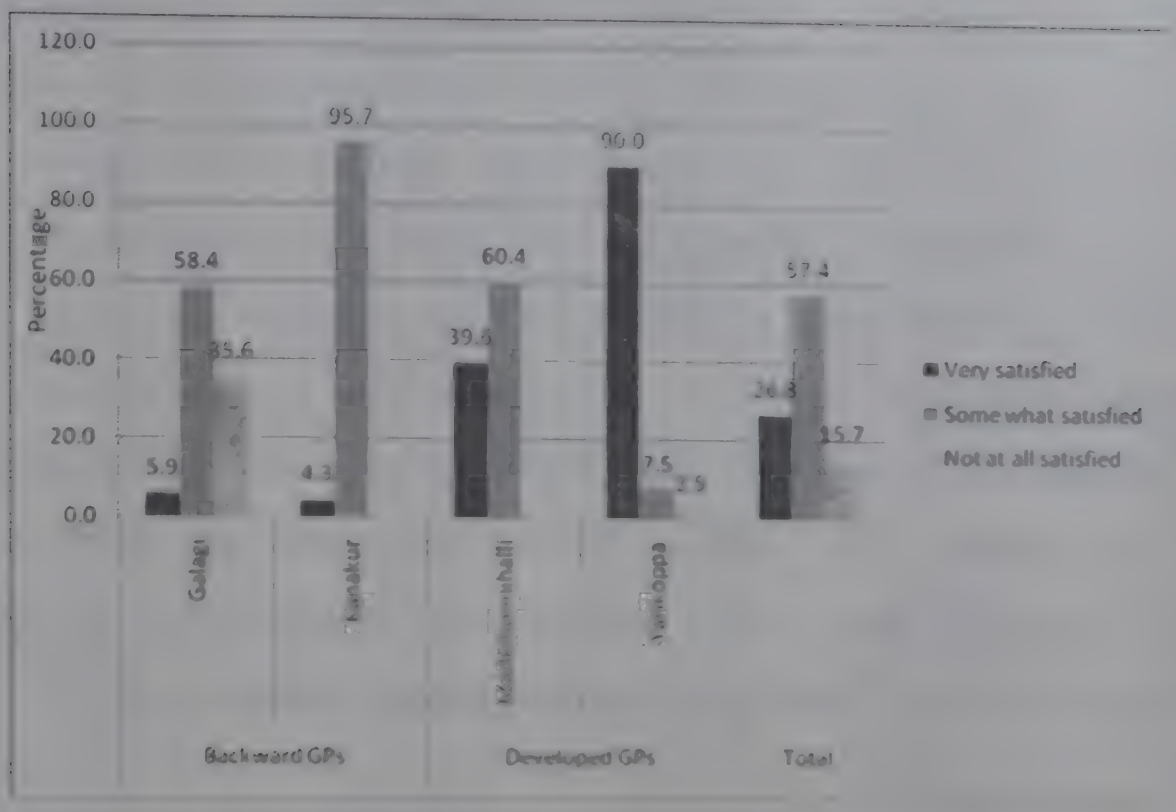
GPs Name	Street bin	Public open space	Own compost	Total
Galagi		14 (13.9)	87 (86.1)	101 (100)
Madkihonnihalli		2 (4.2)	46 (95.8)	48 (100)
Kanakur		7 (15.2)	39 (84.8)	46 (100)
Yarikoppa	7 (17.5)	2 (5.0)	31 (77.5)	40 (100)
Total	7 (3.0)	25 (10.6)	203 (86.4)	235 (100)

Note: Figure is parentheses are percentage to respective total

Household's Perceptions on Village Sanitation Services:

The above tables explain about the individual latrine facility, school latrine facility, community latrine facility and drainage facility, as well as the time spent for open defecation in rural areas. The researcher has enquired about household's opinion about the village sanitation services. More than 73 percent of the households are not satisfied with their village sanitation services. In developed Gram Panchayats like Yarikoppa (90%) and Madakihonnihalli (40%), higher percent of households are satisfied with sanitation services than the household in backward Gram Panchayats Kankur GP (4.3%) and Galagi GP (5.9%). More than 95 percent of households are not satisfied with village sanitation services in backwards GPs.

Figure 6.9: Distribution of Households According to Satisfaction with Village Sanitation Services



Among the 4 GPs, more than 73 percent of households are not very satisfied with the village sanitation facility different reasons, the breakup of which is given in Table 6.36. About 91 percent households are not satisfied due to poor maintenance of village sanitation. Overall households are not happy with maintenance of village sanitation services by the GP.

Table 6.36: Distribution of Households According Reasons of Dissatisfaction with Sanitation Services

GP Name	No Drainage Facility	Poor Maintenance from GP	Total
Galagi	5 (5.3)	90 (94.7)	95 (100)
Kanakur	5 (11.4)	39 (88.6)	44 (100)
Madkihonnihalli	4 (13.8)	25 (86.2)	29 (100)
Yarikoppa	-	4 (100)	4 (100)
Total	14 (8.1)	158 (91.9)	172 (100)

6.6: Financing on Rural Water Supply and Sanitation

It is clear from the above discussion that both water supply and sanitation conditions are much below the required levels in rural areas. This section focuses on financing rural water supply and sanitation in the selected district.

The rural water supply and sanitation is one of the core functions operated at different levels after the funding is received from the Central and State Governments under various schemes. Each of these schemes follow different approaches to different means of funding. The funds are received based on certain criteria and conditions (see chapter 3). The state government is responsible for allotting the funds under the schemes allocated from the Central as well as its own budget to the Zilla Panchayat, Taluk Panchayat and Gram Panchayat. The role of external agencies in funding rural water supply and sanitation needs special mention (World Bank, Danida and Netherlands). Funds received from the externally funded projects flow through the Rural Development and Panchayat Raj Institution where a separate agency is set up to deal with the externally funded projects (More details mentioned in Chapter 4 and 5).

6.6.1 Capital Expenditure on Rural Water Supply and Sanitation

The financial aspect of water resource sector is a matter of very grave and urgent concern. Table 6.37 shows the details of expenditure on rural water supply in Dharwad district. The share of Central and State Government on rural water supply varies from year to year. The share of expenditure on rural water supply during 2003-07 was 52.53 per cent by the Central Government and 47.47 per cent by State Government.

Table 6.37: Expenditure on Rural Water Supply in Dharwad during the Period 2003-07 (Rs in Lakhs)

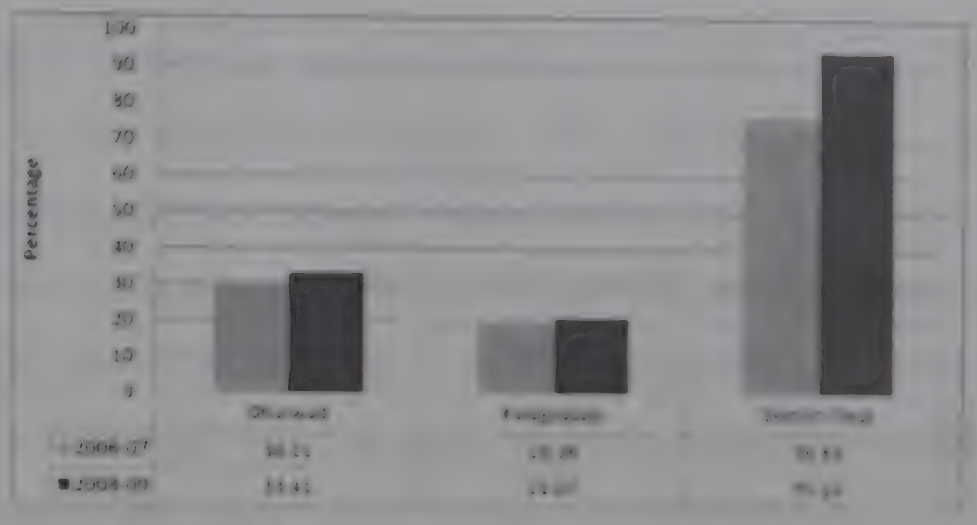
Year	State	Central	Total	State %	Central %	Total %
2003-04	223.03	39.77	262.8	84.87	15.13	100.00
2004-05	199.82	258.4	458.22	43.61	56.39	100.00
2005-06	230.7	137.83	368.53	62.60	37.40	100.00
2006-07	602.17	494.52	1096.69	54.91	45.09	100.00
2007-08	503.16	1015.91	1519.07	33.12	66.88	100.00
2003-07	1758.88	1946.43	3705.31	47.47	52.53	100.00

Source: ZP Annual reports

6.6.2 Operation and Maintenance of Rural Water Supply in Dharwad

The national trend is to decentralize capital investment to engineering departments at the district level and decentralize operation and maintenance to district and Gram Panchayat levels. Figure 6.10 shows that the expenditure on O &M has increased during the year 2006-07 to 2008-09. Dharwad taluk has the highest spending for O&M among all taluks in the district. The Kalaghatagi taluk spends less for O&M of water supply.

Figure 6.10: Operation and Maintenance of Water Supply in Dharwad District



Source: ZP Annual reports

Table 6.38: The Percentage of O&M Expenditure in Dharwad District

Taluk	2008-09			
	PWS	MWS	Hand pump	Total
Dharwad	67.33	18.27	14.40	100.00
Kalaghatagi	61.35	22.04	16.61	100.00
Grand total	66.77	19.40	13.84	100.00

Source: Annual Account of ZP

Further, the percentage of operation and maintenance expenses in Dharwad district is shown in Table 6.38. As shown in the table more than two third of O&M expenditure goes for maintaining the piped water supply. The remaining account to 19.40 per cent and 13.84 per cent and is spent on MWS and hand pumps respectively.

Table 6.39: Expenditure on Water Source in 2006-07

Taluk	No of PWS	Total Exp	Per PWS Exp	No of MWS	Total Exp	Per MWS Exp	No of Hand pump	Total Exp	Per Hand pump Exp
Dharwad	250	2000000	8000	153	535500	3500	672	475600	708
Kalaghatagi	174	715000	4109	139	420000	3022	190	791000	4163
District Total	791	4297800	5433	467	1654900	3544	1227	1630400	1329

Source: ZP Annual Report 2006-07

Table 6.39 shows the details of repairs on water sources and per source expenditure in the district during the year 2006-07. This operation and maintenance cost includes repair of pipes, motor repair and other minor repair. The expenditure is more on PWS (Rs 5433/PWS) than on other sources. The repair expenditure on per PWS is on an average Rs 5433, but varies from one taluk to other. Dharwad taluk has spent the highest amount (Rs 8000/PWS) and Kalaghatagi taluk has spent lowest amount (Rs 4109/PWS) in the year 2006-07. In the district, per MWS expenditure was Rs 3544 in the year 2006-07, while Dharwad taluk has highest spending for MWS repair (Rs 3500/ MWS). Kalaghatagi taluk has spent lowest amount on MWS repair (Rs 3022/MWS). The per hand pump repair expenditure is Rs 1329 in the district. Kalaghatagi taluk has highest expenditure for repairing handpumps (Rs 4163/handpump). and Dharwad taluk spent the lowest amount to repair handpump (Rs 708/handpump) in the district.

Gram Panchayat is responsible for mobilizing initial investments towards contribution during the implementation of specific schemes. The Gram Panchayat needs to ensure that there are no unauthorized connections and no misuse of water by the people. They have to evolve their own system in rectifying the problem, accompanied with repairs at appropriate times. Gram Panchayat is responsible for effective and fair distribution of water to all the

areas or villages. In terms of sanitation facility, Gram Panchayat is responsible for keeping villages clean and healthy under its premises. Gram Panchayat is responsible for construction of new drainage, repair the old drainage, construct and maintain community latrine, and school latrines. GP has to provide latrines to not less than ten per cent of the households every year and achieve full coverage as early as possible under different schemes. Gram Panchayat is responsible for paying the salaries of the bill collector, waterman, helper and sweeper from the GP funds.

The Grama Panchayat receives funds from the Central Government, State Government and external funds for operating and maintenance of water and sanitation. GPs also take up smaller works under self-financing schemes. Operating expenditure of the water authority includes power charges and repair, and maintenance cost, as well as salaries of employees.

6.6.3: Income and Expenditure of Gram Panchayat

The financial source of the Gram Panchayat constitutes all proceeds from the tax, fees and government grants. The source of income can be put under two categories: own sources (like Tax and other fee), and grants from government (Central and State Govt). GPs have received funds from major source given in appendix 6.4. As shown from appendix, the housing scheme, sanitation scheme, Sampoorna Grameen Rozgar Yojana (SGRY) scheme, statutory development grants and own sources are main income sources of GPs during the year 2005-08. As reported in the table, a housing scheme (which included Ashraya Yojana, Ambedkar Vasati Yojana, and Kachacha-Pucca scheme) received higher funding (29.9%) than other schemes in selected GP during the year 2005-08, but this money directly goes to the beneficiaries. The GPs like Yarikoppa (36%) and Kanakur (27%) in the developed taluk received larger funding for Swaccha Grama Scheme for sanitation facilities during the 2005-09. Table 6.40 shows these facts.

Table 6.40: Utilisation of Funds under Various Schemes during the year 2005-08

GP_NAME	Yarikoppa			Kanakur			Madakihonnahalli			Galagi			Total		
	Income	Exp	% Utilised	Income	Exp	% Utilised	Income	Exp	% Utilised	Income	Exp	% Utilised	Income	Exp	% Utilised
Own Resource	309007	307742	99.59	305829	288987	94.49	238373	237841	99.78	779768	757066	97.09	1632977	1591636	97.468366
SDG*	1018560	991510	97.34	1170765	1170765	100.00	1330743	1330743	100.00	83000	80750	97.29	3603068	3573768	99.186804
11/12th Finance	389200	343593	88.28	441460	412074	93.34	410666	255455	62.21	121517	96000	79.00	1362832	1107122	81.236866
SGRY	1233593	1224071	99.23	513909	512839	99.79	556669	556690	100.00	1299936	1281892	98.61	3606107	3577492	99.206485
Housing Scheme	1625410	1468599	90.35	2293972	1356530	59.13	801578	538565	62.51	2427367	1585500	65.32	7208327	4949194	68.659399
Water Scheme	135828	135000	99.39	232609	232409	99.91	111336	83668	75.15	463885	117854	25.41	943658	568931	60.289957
Sanitation Scheme	2680927	2447003	91.27	1909000	1630301	85.40	33320	33320	100.00	217154	184920	85.16	4840401	4295544	88.743557
Others	35236	35236	100.00	0	0		67207	47207	70.24	793045	770016	97.10	895488	852459	95.19491
Total	7427761	6952754	93.60	6867544	5603905	81.60	3611881	3085489	85.43	6185672	4873998	78.79	24092858	20516146	85.154472

Source: GP Annual Reports

- Statutory Development Grant

As mentioned earlier, Gram Panchayats receive funding for development works under various programmes from Central, State and other sources. Table 6.40 presents utilisation of funds under the various schemes in selected GPs during the year 2005-08. Only 85 per cent of the fund was utilised under various schemes in the selected GPs. About 85 per cent of fund were utilised under the schemes of their own resources, development grants, SGRY, and others schemes (library fund, jala rakshane, ingugundi, continue education programme and SGSY) in selected GPs. In schemes such as the 12th finance commission grant, housing scheme, water supply and sanitation schemes utilisation is below 85 per cent in selected GPs. The utilisation of funds is highest in Yarikoppa GP (93.60%) and lowest in Galagi GP (78.79 during the year 2005-08.

Table 6.41: Per Capita Grant for Water Supply and Sanitation -2005-08 (in Rs)

GP_NAME	Developed GPs		Backward GPs		Average Per Capita Grants in Selected GPs
	Developed Taluk GP	Backward Taluk GP	Developed Taluk GP	Backward Taluk GP	
	Yarikoppa	Madakihonnahalli	Kankur	Galagi	
Per capita Grant for Water Supply*	37 (1.8)	34 (3.1)	39 (3.4)	67 (7.5)	44 (3.4)
Per capita Grant for Sanitation Facility	730 (36.1)	10 (0.9)	322 (27.8)	31 (3.5)	273 (21.1)
Per capita Grant for Water and Sanitation Facility	768 (37.9)	44 (4.0)	361 (31.2)	98 (11.0)	318(24.6)
Total Per capita Grant of all schemes of GP	2024 (100.0)	1108 (100.0)	1158 (100.0)	888 (100.0)	1294 (100.0)

*excluding capital grant for water supply

The distribution of funds across the GPs is based on the indicators of population, areas, number of water sources and GPs requirement. The percapita grants for water supply and sanitation facility varies among the GPs. Table 6.41 shows percapita grant for water supply and sanitation for the year 2005-08. The total percapita grant among the GPs varies from Rs 888 to Rs 2094. The GPs of developed taluk have received higher percapita grant than the GPs of backward

taluk. The average percapita grant for water supply is Rs 44 and it varies between Rs 34 to 67 among the selected GPs. The backward GPs have received more percapita grant for water supply than the developed GPs. Although, the grants for water supply are not enough to meet the expenditure of operation and maintenance, GPs are not trying to collect total water tax. The grants for sanitation services are higher than the percapita grant received for water supply. The percapita grant for sanitation is higher in developed taluk like Yarikoppa and Kanakur because they have received grant under the Swacha gram scheme during the reference period. It should be noted that the only those GPs which are willing to mobilize villagers and form VWSC and, place a request grant are consider under Swacha gram scheme.

Table 6.42: Per Capita Expenditure on Water Supply and Sanitation -2005-08 (in Rs)

GP_NAME	Developed GPs		Backward GPs		Average Per Capita Exp in Selected GPs
	Developed Taluk GP	Backward Taluk GP	Developed Taluk GP	Backward Taluk GP	
	Yarikoppa	Madakihonnahalli	Kankur	Galagi	
Per capita Expenditure on Water Supply	79 (4.2)	136 (14.4)	67 (7.1)	42 (6.0)	81 (7.8)
Per capita Expenditure on Sanitation	20 (1.0)	44 (4.6)	19 (2.0)	17 (2.4)	25 (2.4)
Per capita Expenditure on Water and Sanitation Facility	99 (5.2)	180 (19.0)	86 (9.1)	59 (8.4)	106 (10.2)
Total Per capita Expenditure on all schems of GP	1894 (100)	947 (100)	945 (100)	700 (100)	1035 (100)

Note: Figure in parentheses are percentage to respective total

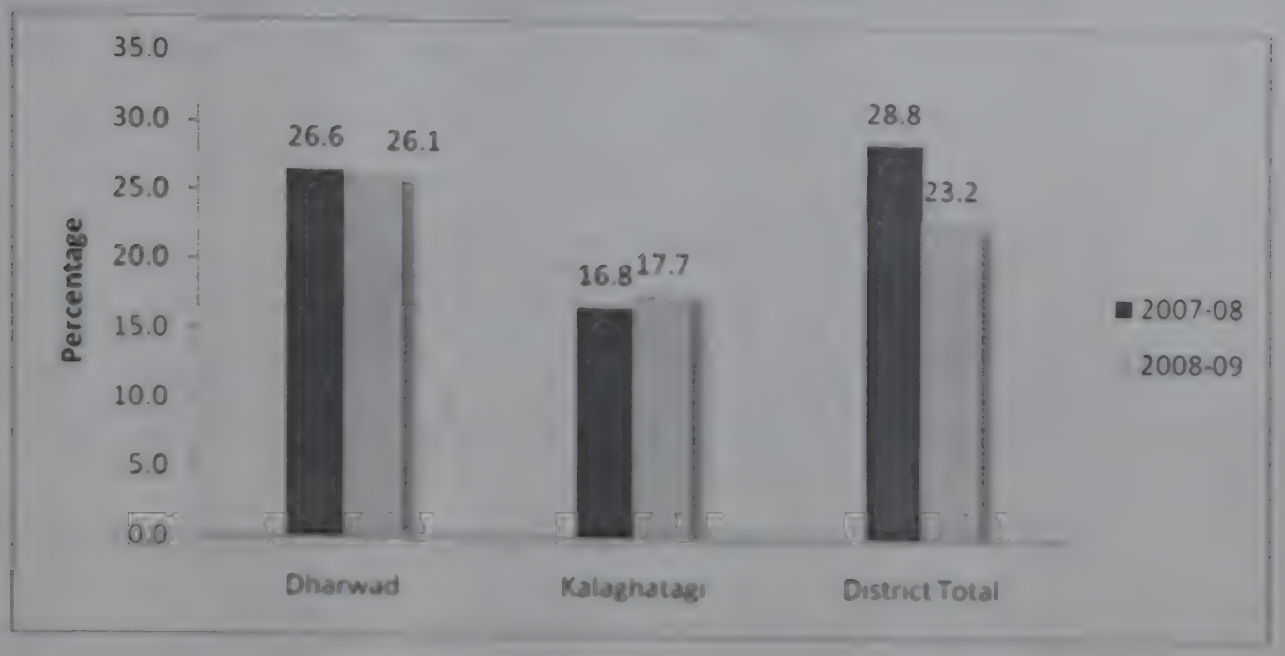
Expenditure of GPs largly depend on amount received from the Zilla Panchayat, Taluk Panchayat, or governments (Central and State) in a particular year. Table 6.42 shows per capita expenditure on water supply and sanitation in the selected GPs during the period 2005-08. On an average, the selected

GPs spend Rs. 1035 per person. The per capita total expenditure among the GPs varies from Rs. 700 to Rs. 1894. The developed GPs spend more than the developing GPs. Although the water supply and sanitation are the basic needs they received less attention by the local governments. **GPs spent only 10.2 per cent on these two sectors.** This shows that local governments are not keen to maintain sanitation and to construct latrine facility in rural areas. The Per capita expenditure on water supply and sanitation differ substantially among the GPs. The average per capita expenditure on water supply is Rs 81 and it varies between Rs 42 to Rs 136 among the selected GPs. Very less amount of money is spent on sanitation sector as compared to magnitude of the problem. The average per capita expenditure on sanitation is Rs 25 in the selected GPs (i.e only 2.4 per cent). It should be noted here that the percapita expenditure on water supply and sanitation is higher in developed GPs.

6.7: Water Tax Collection

In Karnataka, water tariffs in rural areas cover only one third or less of operation and maintenance costs, leading to deficiency in maintenance and poor services. Figure 6.11 presents taluk wise tax collection in Dharwad district during the year 2007-09. **In rural areas of Dharwad, tax collection is only about 28.8 per cent in the year 2007-08**. There is variation in the collected tax by GPs within the district. While collection is higher in Dharwad taluk accounting for 26.55 per cent, it is only 16.78 per cent in the backward taluk Kalaghatagi, in the year 2007-08. The figure also indicates that there is a reduction in tax collected in the year 2008-09.

Figure 6.11: Taluk Wise GPs Tax Collection in Dharwad District



Source: ZP Annual Reports

The field level discussion and calculation carried out show that water tariff revenues are not sufficient to meet the electricity charges, repair and payment to the staff. According to Table 6.43 the percentage of the tax collected by GPs varied during the year 2005-08. The tax collected yearly varied between Rs 120 to Rs 300. It is observed that charges levied did not have any direct influence on water supply efficiency. GPs were paying higher charges, and faced problems of scarcity and inadequacy accompanied by inaccessibility. This was due to various reasons like inefficiency of bill collectors, source management, distribution and power problems. Hence, people complained that, even though they paid the water charges, they were not happy with the service. There were two opinions in this regard. While some accepted that GP could not do anything about it, others felt that some solution had to be sought by GP.

Table 6.43 presents details of tax collected in selected Gram Panchayats. However, the collection in response to such tax seems to be very less. Every GP collects various charges (House tax, Cess, Water tax, Street light and others like land tax, shop rent, penalty, license fee, etc.) from the households. Every Gram Panchayat is preparing total demand list for collect the tax in every year. In selected GPs, the collection of tax in total demand as given in figure 6.12.

Table 6.43: Details of Tax Collection in Selected GPs

Perticulars	Yarikoppa			Kanakur			Madakihonnahalli			Galagi		
Source of Tax	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007
House	20.71	26.47	18.64	13.11	14.75	10.65	11.91	30.61	33.31	59.26	37.68	4.11
Cess	11.43	13.00	17.00	61.34	86.16	18.12				4.19	7.93	17.47
Water	35.38	80.72	32.19	37.07	91.16	28.88	10.08	16.38	15.73	11.29	14.68	71.29
Street light	20.04	20.72	14.02	31.87	59.03	20.67				3.07	9.85	6.03
Others	43.80	100.00	100.00	11.27	71.57	8.12	22.98	17.92	19.54	100.00	20.11	15.42
Total	30.00	45.11	28.47	19.80	36.44	13.66	16.21	22.34	20.76	23.30	20.61	18.11

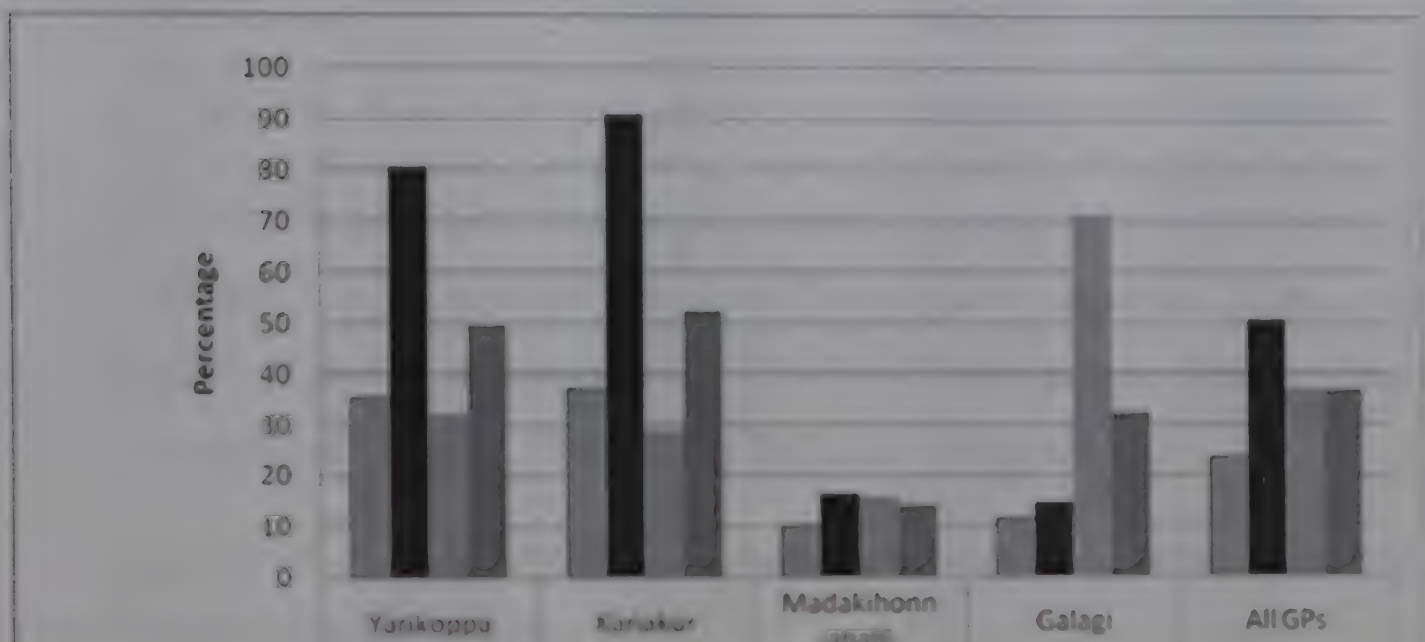
Figure 6.12: Collection of Tax in Total Demand in Selected GPs

Water Taxes

Table 6.43 depicts water taxes collected from selected GPs. Collection of water charges vary from one GP to another. Firstly, water taxes are not based on the cost incurred on operations and maintenance; charges are based on the discretion of the GPs. The government has suggested that every GP has to maintain and repair the water supply sources through tax collection (own resource) from households. In reality, the cost of O&M is much higher than the amount charged. **The study found that the GPs were unable to meet the total cost of operation from the amount derived as user charges and also that user charges did not have any influence on the efficient functioning of**

the systems. This is observed across GPs. For instance in Kanakur GP households received inadequate quality of water even though they paid user charges regularly. This is attributed to reasons such as drying up of the source, bad service system (especially inefficiency of waterman) and electricity problems.

Figure 6.13: Water Tax Collection in Selected GPs (in per cent)



2005-06	35.38	37.07	10.08	11.29	23.46
2006-07	80.72	91.16	16.38	14.68	50.74
2007-08	32.19	28.88	15.73	71.29	37.02
Average 2005-08	49.43	52.37	14.06	32.42	37.07

Figure 6.13 shows GP-wise water tax collected in the selected GPs during the year 2005-08. Although there is an increase in the rate of tax collected during the period 2005-08, it is clear that only one fourth of the demand is raised through tax collection. In such cases it would be difficult to manage all the works with a shortage to the extent of 75 per cent.

Table 6.44: Water Tax paid by Household in Reference Year

GPs Name	Yes	No	Total
Galagi	60 (59.4)	41 (40.6)	101 (100)
Madkihonnihalli	28 (58.3)	20 (41.7)	48 (100)
Kanakur	33 (71.7)	13 (28.3)	46 (100)
Yarikoppa	35 (87.5)	5 (12.5)	40 (100)
All GPs	156 (66.4)	79 (33.6)	235 (100)

As shown in table 6.44 about 66.4 per cent of households paid water tax, while 33.6 per cent households defaulted. The payment of water charges by households is higher in developed taluk GPs like Yarikoppa and Kanakur than the backward taluk GPs like Madakihonnihalli and Galagi GP.

6.8: Willingness to Pay (WTP) for Adequate Supply of Safe Drinking Water and Sanitation Facility

Willingness to pay for water and sanitation indicates the attitude of the people in considering water as a social or an economic good. People are willingness to pay (WTP) if they are assured reliable of water supply that has no health risk or contamination. The results indicate that the households' willingness to pay for improved water services is much higher than their current water bills. Therefore, this study also looked into rural people's willingness to pay for water supply and sanitation services.

6.8.1: Willingness to Pay for Adequate of Water Supply

Water, which has been considered a social good for centuries, has become an economic good with growing demand and scarcity, and that can be attributed to various reasons[11]. Rural households are willing to pay to support a policy, which provides them better and reliable water supply. The alternate

[11] Raju,K.V (2004): "*Rural Water Supply in Karnataka*" unpublished project report, Institute for Social and Economic Change pp 38.

scenario emphasizes two aspects of the proposed improved services: (i) longer hours of service that would gradually move from intermittent to continuous scheme, and (ii) good quality water with no health risk or contamination.

Table 6.45: Willingness to Pay for Adequate of Water Supply

GP Name	Yes	No	Total
Galagi	17 (16.8)	84 (83.2)	101(100.0)
Madkihonnihalli	15 (31.3)	33 (68.8)	48 (100)
Kanakur	23 (50.0)	23 (50.0)	46 (100)
Yarikoppa	14 (35.0)	26 (65.0)	40 (100)
Total	69 (29.4)	163 (70.6)	235 (100.0)

Table 6.45 shows households' willingness to pay to get better water service from the Panchayat. Result indicates that about 29.4 per cent of people are willing to pay for adequate water supply. The households in developed taluk are ready to pay more money to get better water supply than those in backward taluk GPs. In the selected GPs, households are willing to pay Rs 10 to Rs 50 extra for securing reliable water supply. The findings have significant policy implications for gauging public support for the ongoing performance. improvement plan, which aims at universal clean potable water for an increased number of hours, gradually shifting towards continuous and more equitable water supply.

6.8.2: Willingness to Pay for Sanitation Facility:

Although many studies[12] focused on willingness to pay for water supply none of the studies explain willingness to pay for individual latrine. Many schemes like Swaccha Grama, Total Sanitation Scheme and Niramala Garam (details given in Chapter 4) focus on 100 per cent coverage with sanitary

[12] a) K.V. Raju, S. Manasi, and Veershekarappa (2006): "*Perception and Politics: Grey Zones in Rural Water Supply*" edited by K.V.Raju "Elixir of Life" Published by Books for Change, Bangalore.
b) D. Rajasekhar, R. Manjula, K.H. Anantha (2006): "Charges *for Rural Drinking Water: Gram Panchayats in Karnataka*", edited by K.V.Raju "Elixir of Life" Published by Books for Change, Bangalore.
c) Ratna Reddy .V. (1999): "Pricing of Rural Water: A Study of Willingness and Ability to Pay in Western India", *Journal of Social and Economic Development*, Vol.II, No 1, Jan-June 1999.

facilities in rural areas. An important objective of Millennium Development Goals (MDG) is to cover villages with 100 per cent latrine facility by 2011. **The reality is that only 21 per cent of households are covered by latrine facility in the rural areas in Karnataka as well as in selected GPs.** Therefore, this study highlights the importance of individual latrines and shows that at least around 41.6 per cent households' are willing to pay to have individual facilities (Table 6.46).

6.8.2a: Individual Latrine

Table 6.46: Household's Willingness to Pay for Individual Latrine

GP Name	Yes	No	Total
Galagi	37 (39.8)	56 (60.2)	93 (100)
Madkihonnihalli	16 (44.4)	20 (55.6)	36 (100)
Kanakur	12 (41.4)	17 (58.6)	29 (100)
Yarikoppa	12 (44.4)	15 (55.6)	27 (100)
Total	77 (41.6)	108 (58.4)	185 (100)

However, more than 58.4 per cent of rural Household's were not willing to pay for individual latrine for reasons given in Table 6.47. Most (61.1 per cent) of the rural households have economic problems for constructing individual latrines, and therefore, not willing to pay for individual latrine. 35.2 per cent people were not willing to pay for individual latrine due to lack of space to construct latrine. The remaining 2.8 per cent of households are not interested to have the latrine facility.

Table 6.47: Reasons for Household's unwillingness to Pay for Individual Latrine

GP Name	Scarcity of Place	Not interested to construct latrine	Economic problem	Rented House	Total
Galagi	24 (42.9)	-	31 (55.4)	1 (1.8)	56 (100)
Madkihonnihalli	2 (10.0)	1 (5.0)	17 (85.0)	-	20 (100)
Kanakur	4 (23.5)	-	13 (76.5)	-	17 (100)
Yarikoppa	8 (53.3)	2 (13.3)	5 (33.3)	-	15 (100)
Total	38 (35.2)	3 (2.8)	66 (61.1)	1 (0.9)	108 (100)

Table 6.46 reports that 41.6 per cent of HHs are willing to pay for individual latrine facility. In addition, table 6.48 presents households according to amount they are willing to pay for individual latrines. The percentage of HHs which are willing to pay in the range Rs100 -500 is 31 per cent, while HHs which are willing to pay between Rs 500-1000 is 22.1 per cent. And HHs which are willing to pay between Rs 1000-1500 is 16.9 per cent. About 31.2 per cent of the rural HHs are willing to pay between Rs 1500-2000 and only 2.6 per cent of the HHs are willing to pay above Rs 2000. HHs which are willing to pay for individual latrine expect more subsidy (already GP is giving Rs 1200 under the TSC scheme) from the Government.

Table 6.48: Percentage of Households According to Willingness to Pay for Individual Latrine (Range)

GP Name	100-500	500-1000	1000-1500	1500-2000	More than 2000	Total
Galagi	5 (13.5)	8 (21.6)	9 (24.3)	15 (40.5)	-	37 (100)
Madkihonnihalli	9 (56.3)	3 (18.8)	-	3 (18.8)	1 (6.3)	16 (100)
Kanakur	6 (49.9)	2 (16.6)	1 (8.3)	3 (25.0)	-	12 (100)
Yarikoppa	1 (8.3)	4 (33.3)	3 (25.0)	3 (25.0)	1 (8.3)	12 (100)
Total	21 (27.3)	17 (22.1)	13 (16.9)	24 (31.2)	2 (2.6)	77 (100)

6.8.2b: Willingness to Pay for Community Latrine

The households who are economically backward and facing problems with scarcity of place to construct latrine are willing to pay for community latrine. As Table 6.49 indicates, 26 per cent of the households are willing to pay for better service. Households in GPs of developed taluk have higher willingness to pay than the households in GPs of backward taluk. The percentage of households willing to pay is higher in Yarikoppa GP (52.5) and lowest in Madkihonnihalli GP.

Table 6.49: Households Willingness to Pay for Community Latrine

GP Name	Yes	No	Total
Galagi	20 (19.8)	81 (80.2)	101 (100)
Madkihonnihalli	4 (8.3)	44 (91.7)	48 (100)
Kanakur	17 (37.0)	29 (63.0)	46 (100)
Yarikoppa	21 (52.5)	19 (47.5)	40 (100)
Total	62 (26.4)	173 (73.6)	235 (100)

Table 6.50 shows, the percentage of households which are willing to pay for maintenance and operating costs for community latrines. Households willing to pay less than or equal to Rs 10 is 17.7 per cent while, households willing to pay between Rs 10-20 is 41.9 per cent. Nineteen per cent of the households are willing to pay above Rs 50 for maintenance of community latrines, and this is an encouraging factor.

Table 6.50: Households Willingness to Pay (per month) for Maintenance Cost of Community Latrine (Amount in Rupees)

GP Name	<10Rs	10-20	20-30	50>	Total
Galagi	2 (10.0)	9 (45.0)	9 (45.0)	-	20 (100)
Madkihonnihalli	1 (25.0)	3 (75.0)	-	-	4 (100)
Kanakur	4 (23.5)	7 (41.2)	2 (11.8)	4 (23.5)	17 (100)
Yarikoppa	4 (19.0)	7 (33.3)	2 (9.5)	8 (38.1)	21 (100)
Total	11 (17.7)	26 (41.9)	13 (21.0)	12 (19.4)	62 (100)

Tables (Table 6.49 and 6.50) present the percentage of households which are willing to pay for community latrine and willing to pay for better service of community latrine. Table 6.51 explains the reasons for households' unwillingness to pay for community latrine. About 46 per cent of the households were worried about the maintenance of latrines by the GPs and other institutions, and 27.2 per cent of household were not willing to pay because of economic problems. One per cent of the households were unwilling to pay for the reason of scarcity of place and insufficient supply of water to clean community latrine.

Table 6.51: Distribution of Households According to their unwillingness to Pay for Community Latrine

GP Name	Economic problem	Maintenance problem	Scarcity of place	Have own toilet facility	Water problem	Total
Galagi	26 (32.1)	47 (58.0)		7 (8.6)	1 (1.2)	81 (100)
Madkihonnihalli	16 (36.4)	17 (38.6)		11 (25.0)		44 (100)
Kanakur	2 (6.9)	12 (41.4)	1 (3.4)	13 (44.8)	1 (3.4)	29 (100)
Yarikoppa	3 (15.8)	5 (26.3)	1 (5.3)	10 (52.6)		19 (100)
Total	47 (27.2)	81 (46.8)	2 (1.2)	41 (23.7)	2 (1.2)	173 (100)

6.9: Conclusion

The water supply and sanitation provision form a part of the human habitat and have serious implications on health and well being of people. Many water supply and sanitation schemes are planned to provide good water supply facility and sanitation in rural areas. Most of the rural households are using modern water sources like PWS, MWS and hand pumps/ bore wells for drinking and cooking purpose in the selected GPs as well as in the district. Less than one percentage of the households are using traditional water sources such as rivers, lakes, open well and streams for drinking, and more than 14 per cent households are using traditional water sources for washing/bathing purpose in selected GPs. More than 50 per cent of the households reported about their members' waiting time to collect water from public sources in the rural areas.

The second issue discussed in this chapter relates to the quality of water supplied. On the one hand it is concerned with the idea of safe water to ensure public health and to safeguard against ill health and other related consequences. On the other hand, it is important to emphasize that we not only need more water but we also need water that is sufficiently pure, to be used for the purpose of drinking and cooking. **More than 50 per cent of the rural households are not satisfied with the quality of water supply. The problems of water supply are higher in backward GPs than those in**

developed GPs. However, people are not much concerned about quality of water and treatment of drinking water in the rural areas.

The third issue discussed in this chapter relates to rural sanitation in Dharwad district. **The survey result show that most of the households (more than 77%) are not having latrine facility in rural areas and of those who have latrine facilities, one third are not using them in the selected GPs**. Only one GP (Kanakur GP) has a community latrine among the four GPs. Even though Kanakur GP has community latrine facility, because of improper maintenance people are not using that latrine. The management of drainage and garbage is an another important area for improving sanitation condition in rural areas. Only fifty per cent of households have drainage facility in selected GPs and most of the rural households throw garbage or waste in selected spot to turn it into compost. No proper arrangements are made by GP to collect households' waste in the rural areas.

The initial capital and later supplements for the provision of water supply and sanitation are almost wholly Government financed, and the panchayats thus bear no burden of foregoing its resources for this purpose. The water scheme handed over to a Gram Panchayat for its operation and maintenance does not mean that the Government would not finance either repair or extension activities. The Gram Panchayat receives a small amount towards repair and maintenance from the Government. The Government has suggested to all GPs to carry out operational and maintenance expenses mainly through the collection of beneficiaries (households) taxes. However, the collection of taxes is less than 24 per cent of tax levied in Dharwad district in the year 2008-09. Even in selected GPs, only one third of the water tax and total tax is collected.

Finally, the discussion on willingness to pay from households reveals that more than 30 per cent of households are willing to pay to get better service for drinking water and sanitation facility in the selected GPs. However, the willingness to pay may not reflect the ability of the households to pay, as lower income group households are also willing to pay a larger proportion of their household's consumption towards water supply and sanitation facility.

Appendix 6.1: Literacy Rate of Selected Gram Panchayats

Taluk Name	GP Name	Village Name	Literacy					
			Male	Female	Total	Male (%)	Female (%)	Total
Dharwad	Kanakur	Kavalgeri	574	366	940	68.41	47.29	58.28
		Chandanmatti	351	174	525	67.76	38.16	53.90
		Kanakur	238	147	385	76.77	46.82	61.70
		Talwai	236	136	372	65.37	38.86	52.32
		Vanahalli	411	218	629	69.66	40.45	55.71
		Grand Total of GP	1810	1041	2851	69.14	42.79	56.44
	Yenkoppa	Kanavihonnapura	563	355	918	79.07	51.82	65.71
		Nayakanahalli	222	123	345	79.57	46.95	63.77
		Yenkoppa	464	320	784	77.85	56.74	67.59
		Grand Total of GP	1249	798	2047	78.70	52.81	66.07
Kalaghatagi	Galagi	Galagi	1216	743	1959	63.60	41.60	52.97
		Hasarambi	238	112	350	58.19	31.64	45.87
		Hullakoppa	468	333	801	64.73	49.12	57.17
		Grand Total of GP	1922	1188	3110	63.14	42.16	53.05
	Madkihonnihalli	Sangedevarkoppa	292	158	450	72.28	41.15	57.11
		Madkihonnihalli	531	350	881	74.06	52.71	63.79
		Hindasgeri	223	140	363	67.99	44.16	56.28
		Grand Total of GP	1046	648	1694	72.19	47.47	60.20

Source: Census 2001

Appendix 6.2: Livelihood Opportunity in Selected GPs

Taluk Name	GP Name	Village Name	Total Worker			Main Worker			Marginal Worker			Non Worker		
			Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Dharwad	Kanakur	Kavalgeri	616	435	1051	581	330	911	35	105	140	348	467	815
		Chandanmatti	374	263	637	357	247	604	17	16	33	221	269	490
		Kanakur	208	73	281	200	70	270	8	3	11	163	300	463
		Talwai	264	187	451	234	74	308	30	113	143	172	237	409
		Vanahalli	391	340	731	378	228	606	13	112	125	300	303	603
		Grand Total of GP	1853	1298	3151	1750	949	2699	103	349	452	1204	1576	2780
	Yerikoppa	Kanavihonnapura	568	424	992	505	350	855	63	74	137	258	409	667
		Nayakanahalkatti	241	226	467	190	34	224	51	192	243	87	106	193
		Yerikoppa	425	379	804	418	303	721	7	76	83	273	274	547
		Grand Total of GP	1234	1029	2263	1113	687	1800	121	342	463	618	789	1407
Kalaghatagi	Galagi	Galagi	1412	862	2274	1346	769	2115	66	93	159	846	1225	2071
		Hasarambi	359	286	645	308	169	477	51	117	168	140	148	288
		Hulakoppa	564	374	938	523	298	821	41	76	117	307	444	751
		Grand Total of GP	2336	1522	3857	2177	1236	3413	158	286	444	1293	1817	3110
	Madkihonnihalli	Sangedevarkoppa	309	269	578	268	173	441	41	96	137	158	184	342
		Madkihonnihalli	512	406	918	469	259	728	43	147	190	295	370	665
		Hindasgeri	262	218	480	241	138	379	21	80	101	117	159	276
		Grand Total of GP	1083	893	1976	978	570	1548	105	323	428	570	713	1283

Source: Census 2001

Appendix 6.4: Details of Income of Selected GPs during the year 2005-08

(Amount in Rupees)

GP_NAME	Yarikoppa	Per cent	Kanakur	Per cent	Madakih onnahalli	Per cent	Galagi	Per cent	Total	Per cent
Own Resource	309007	4.16	305829	4.45	238373	6 60	779768	12.61	1632977	6.78
Statutory Development Grant	1018560	13.71	1170765	17.05	1330743	36.84	83000*	1.34	3603068	14.95
11/12th Finance	389200	5 24	441460	6 43	410655	11 37	121517	1 96	1362832	5 66
SGRY	1233593	16 61	513909	7 48	558669	15 47	1299936	21 02	3606107	14 97
Housing Scheme	1625410	21 88	2293972	33 40	861578	23 85	2427367	39 24	7208327	29 92
Water Scheme	135828	1 83	232609	3 39	111336	3 08	463885	7 50	943658	3 92
Sanitation Scheme	2680927	36 09	1909000	27 80	33320	0 92	217154	3 51	4840401	20.09
Others**	35236	0 47	-	-	67207	1 86	793045	12 82	895488	3 72
Total	7427761	100 00	6867544	100 00	3611881	100 00	6185672	100 00	24092858	100 00

Source: GP Annual Reports

*only one time received SDG amount

Others schemes included: library fund, Jala Rakshane, Ingugundi, continue education and SGSY.

Appendix 6.3: Details of Main and Marginal Worker in Selected GPs

Taluk Name	GP Name	Village Name	Cultivators	Agriculture Labour	Household Workers	Other Services	Total Workers
Dharwad	Kanakur	Kavalgeri	407	467	28	149	1051
		Chandanmatti	237	235	25	140	637
		Kanakur	131	78	4	68	281
		Talwai	175	218	23	35	451
		Vanahalli	378	234	6	113	731
		Grand Total of GP	1328	1232	86	505	3151
	Yerikoppa	Kanavihonnapura	490	122	7	373	992
		Nayakanahulikatti	294	76	3	94	467
		Yenkoppa	159	350	27	268	804
		Grand Total of GP	943	548	37	735	2263
Kalaghatagi	Galagi	Galagi	1120	680	146	328	2274
		Hasarambi	380	213	3	49	645
		Hulakoppa	511	279	19	129	938
		Grand Total of GP	2011	1172	168	506	3857
	Madkihonnihalli	Sangedevarkoppa	249	217	24	88	578
		Madkihonnihalli	361	334	15	208	918
		Hindasgeri	375	89	1	15	480
		Grand Total of GP	985	640	40	311	1976

Source: Census 2001

Appendix 6.5: Expenditure Details of Various Schemes in Selected GPs during the Year 2005-08

GP NAME	Yarikoppa	Per cent	Kanakur	Per cent	Madakih onnahalli	Per cent	Galagi	Per cent	Total	Per cent
Own Resource	307742	4 43	288987	5 16	237841	7.71	757066	15.53	1591636	7.76
Statutory Development Grant	991510	14 26	1170765	20 89	1330743	43 13	80750	1 66	3573768	17.42
11/12th Finance	343593	4 94	412074	7 35	255455	8 28	96000	1.97	1107122	5.40
SGRY	1224071	17 61	512839	9 15	558690	18 11	1281892	26.30	3577492	17.44
Housing Scheme	1468599	21 12	1356530	24 21	538565	17 45	1585500	32.53	4949194	24.12
Water Scheme	135000	1 94	232409	4 15	83668	2 71	117854	2 42	568931	2.77
Sanitation Scheme	2447003	35 19	1630301	29 09	33320	1 08	184920	3 79	4295544	20.94
Others	35236	0.51	0	0	47207	1 53	770016	15.80	852459	4.16
Total	6952754	100	5603905	100	3085489	100	4873998	100.00	20516146	100.00

Source: GP Annual Reports

CHAPTER- 7

COMMUNITY PARTICIPATION IN RURAL WATER SUPPLY AND SANITATION

7.1: Introduction

In the previous chapter, we have explained the profile of study areas adequacy of water supply, quality of water, access to sanitary facility and financing of water supply and sanitation in rural areas. In this section, the discussion is focused on the role of Gram Panchayat and community participation in rural water supply and sanitation. The community participation is not a new concept and in fact was very much in force prior to independence. Role of Gram Panchayat as statutory bodies in the provision of rural water supply and sanitation is a old issue in a new form. Indian villages are known for community participation. Participation is a process which helps local organization to implement the rules and arrive at decisions in a democratic manner to achieve good development outcomes. The ultimate objective of any local level community initiative is to achieve the desired level of performance of local organization or quality in the delivery of rural water supply and sanitation. Performance of local organizations has been assessed in different ways. Economic gains, social benefits, equity, effectiveness and sustainability are usually considered as the indicators to evaluate the performance of local organizations (Narayan and Deepa, 1993; Rajshekhar and Veerashekarappa, 2003)[13].

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[13] Narayan, Deepa (1993): " Participatory Evaluation. Tools for Managing Change in Water and Sanitation", *World Bank Technical Paper No. 207*. Washington D.C: The World Bank

Rajshekar,D. and Veershekarappa (2003):"Role of Local Organization in Water Supply and Sanitation Sector: a Study in Karnataka and Uttaranchal States, India". World Bank Project on Roles of Rural Local Organization. ISEC, Bangalore

Providing safe drinking water and sanitation to the rural community is the sole responsibility of the state and it has been incorporated in the Fifth Five Year Plan as part of the Minimum Needs Programme (MNP)[14]. However, since Seventh Five Year Plan there has been a shift in the policy of the Government to involve beneficiaries in the decision making process for improving the water supply and sanitation facility. Community is expected to share a part of the capital cost and 100 per cent operation and maintenance cost. But, community participation is expected to provide a place for voice and choice for beneficiaries in implementation (Puspangadan and Murgan, 1998; Veershekarappa 2003)[15]. Such initiatives would bring decision-making to the village level where users can decide, among other things, better technology, location of facility, level and hours of service and related other issues.

7.2: Role of Gram Panchayats in RWSS

As mentioned in earlier chapter (Chapter 4) water supply and sanitation services are considered as the responsibilities of State Government in India. First five year plan onwards funds have been allocated for rural water supply and sanitation in the state budgets. And State Governments provide technical and financial assistanance to the ZPs. Based on the requirements of TPs and GPs the programmes are designed by ZP.

Ravichandra and Boopathi (2002) have pointed out that huge capital and maintenance cost of the water supply schemes make the budgetary allocation to the sector inadequate. Hence, the constitutional amendment of 1972 empowered the Panchayat Raj Institution with the financial autonomy to raise

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14 In support of this, the Rajeev Ganadi Drinking Water Mission and Swajaladhara, to provide potable water supply in a time bond period (more details of these scheme motioned in chapter 4). In continuation of this, Total Sanitation Campaign (TSC) and Swacha Grama Programme (see chapter 4) was launched by government recently. Further the Information, Education and Communication (IEC) system was integrated in to RWSS programme.

15 Pushpangdan, K and Murgan,G (1998): "User Financing and Collection Action: Relevance for sustainable Rural Water Supply in India" , *Economic and Political Weekly*; Volume XXXIII, Issue No 14, PP 793 April 4.
Veershekarappa (2001): "Community Participation in Rural Drinking Water and Sanitation: A case study of Karnataka", Working Paper No. 91, Institute for Social and Economic Change

the funds in order to fulfill the responsibility of the operation and maintenance of water supply and sanitation system.

In Karnataka drinking water supply can be broadly classified into two categories. The first category includes the schemes owned and operated by the state government through the Karnataka Rural Water Supply and Sanitation Board (KRWS&S) and local governments. The second category comprises of family managed drinking water supply which includes individual families creating their own drinking water recourse by construction of wells in the premises of their house and managing water supply and sanitation by themselves.

Decentralization efforts have received increased emphasis in several states after the 73rd and 74th constitutional amendments. The Karnataka state government transferred many of the development functions and 35 to 40 per cent of its plan funds to the local elected bodies. The local bodies have to take part in resolving drinking water and sanitation problems in their jurisdiction. The state government has decided to transfer all small rural water supply and sanitation schemes within the boundary of each GP to the local bodies with associated power to levy and collect water user charges. Therefore, government has transferred several schemes to GPs.

The involvement of Gram Panchayats for rural water supply and sanitation in any village or smaller habitation is both simple and complex. Simple because its goals are simple to ensure adequate and sustainable water supply and sanitation to all. Complex because this requires not only complex and expensive infrastructure (water collection, treatment and disposal) and mechanisms for quality control but also co-ordination across many sectors and co-operation from users include willingness to pay. At the village level water and sanitation related complaints are lodged before or discussed in Gram Sabha and Ward Sabha. Responsibilities of Gram Sabha and Ward Sabha are discussed below.

Responsibilities of Ward Sabha

Ward Sabha: subject to the general orders of the government Ward Sabha shall meet at least once in six months in every ward or village. This meeting is very useful for discussion of developmental works, other schemes and programmes and problems of the villagers with regard to provision of different facilities. The quorum for the meeting of a Ward Sabha shall not be less than one tenth of the total number of members of the Ward Sabha or twenty members whichever is less. It is necessary that not less than thirty per cent of the voters attending the Ward Sabha, should be women. As far possible the persons belonging to the Scheduled Castes and Scheduled Tribes shall be represented in proportion to their population in the Ward Sabha. Ward Sabha needs to be conducted in each ward/village before the Gram Sabha meeting in all the selected GPs. The discussion generally includes new pipeline connection for particular street; repair and maintenance, of old pipe lines, construction of new drainage and cleaning, new sanitation schemes, and identification of beneficiaries for new water line and individual latrine schemes in Ward Sabha.

Responsibilities of Gram Sabha

After the Ward Sabha, Gram Sabha has to be conducted for each Gram Panchayat at least once in six months, provided that a special meeting of the Grama Sabha shall be convened if a request is made by not less than ten per cent of the members of the Grama Sabha with items of agenda specified in such request, and there shall be a minimum three months period between two special meetings of the Gram Sabha. The quorum for the meeting of a Gram Sabha shall not be less than one tenth of the total number of members of the Gram Sabha, or hundred members, whichever is less. As far as may be, at least ten members from each Ward Sabha within the Panchayat area shall attend the meeting and not less than thirty per cent of the members attending the Gram Sabha shall be women. As far as may be the persons belonging to the Scheduled Caste and Scheduled Tribes shall be represented in proportion to their population in the Gram Sabha.

Gram Sabha and as well as Ward Sabha have the primary responsibility of making provision of drinking water and sanitation in rural areas. This function has been assigned to the Gram Sabha under section 7 of the Karnataka Panchayat Raj Act, 1993. The relevant part of the section states that the Gram Sabha shall have the following functions related to water supply and sanitation facility, namely:-

a) To generate proposals and determine the priority of all water and sanitation schemes and development programmes to be implemented in the Panchayat area by the Zilla Panchayat or Taluk Panchayat.

(b) To identify and select the most eligible persons from the Panchayat area for water and sanitation beneficiary oriented schemes on the basis of criteria fixed by the Gram Panchayat, Taluk Panchayat, Zilla Panchayat or the Government, and to prepare list of beneficiaries in the order of priority after considering the priority lists of individual beneficiaries sent by the Ward Sabha.

(c) To get information from the officers of the Gram Panchayat regarding the service of water supply and sanitation works proposed to be carried out by them in the succeeding period of six months after the meeting of the Gram Sabha.

(d) To get information about water and sanitation facility from the Gram Panchayat on the rationale of every decision of the Gram Panchayat concerning the Panchayat area.

(e) To make efforts to ensure that the members of Gram Sabha pay water taxes to the Gram Panchayat.

(f) To decide, after considering the suggestions of the Ward Sabha the location of street or community water taps, public wells, public sanitation units, and to report on the satisfactory completion of the works.

(g) To impart awareness on matters of public interest such as, proper use of drinking water, cleanliness, preservation of environment and prevention of pollution.

(h) To assist employees of the Gram Panchayat in sanitation arrangements in the panchayat area and to render voluntary service in the removal of garbage.

7.2 a. Gram Sabha Meetings Conducted by Sample GPs

From table 7.1 it is clear that all the selected GPs conducted Gram Sabha twice in the reference year (2008-09). Male participation is found to be higher in all the GPs except Yarikoppa GP. Since, Yarikoppa GP is one of developed GPs and has high literacy rate, female participation is higher i.e 57 per cent. Less than 5 per cent of people attended Gram Sabha in the selected GPs. The people's participation level is higher (about 4.5%) in developed GPs(Yarikoppa and Madakihonnihalli) than the backward GPs (about 2 % in Kanakur and Galagi). The Gram Panchayat is primarily responsible for making provision for drinking water and sanitation in rural areas (This function has been assigned to the Gram Sabha under section 7 of the Karnataka Panchayat Raj and Gram Swaraj Act, 1993). Its activities reflect the problems discussed in Gram Sabha. Following matters were discussed in selected GPs:

A. Rural Water Supply

1. Rural water supply schemes and programmes.
2. New pipeline connection for households.
3. Repair of old pipelines and maintenance (like water leakage from pipes).
4. Shortage of drinking water especially in summer season.
5. Identification and selection of eligible people for beneficiary oriented water supply schemes on the basis of criteria fixed by the Gram Sahba.

B. Rural Sanitation

1. Creating awareness about new sanitation schemes.
2. Cleaning of drainage and maintenance of village cleanliness.
3. Construction of new drainages and repair and maintenance of old drainage.
4. Construction, repair and maintenance of school latrines.
5. Selection of beneficiaries for new latrine schemes.

C. Other Problems

1. Road repair and maintenance.
2. Construction of new street roads.
3. Discussion on housing scheme and beneficiary selection.
4. Discussion on other problems in villages coming under the GPs.

Work done (follow-up) after Gram Sabha in Selected GPs

As mentioned above many matters related to water supply and sanitation were discussed in Gram Sabha. It was found that except Kanakur GP other selected GPs have mostly attended to water related problems discussed in Gram Sabha. But Galagi and Kanakur GPs have not solved sanitation related problems. The Kanakur GP has neglected other problems (like road repair, tank repair and works under NREGY) after Gram Sabha meeting (details mentioned in Table 7.1). The major problem of Kanakur GP for neglecting village problems is due to frequent transfer of GP Secretary and lack of people's support in carrying out developmental works in the GP.

Table 7.1: Details of Last Gram Sabha in Selected GPs

Particulars	Yarikoppa	Kanakur	Madakihonnihalli	Galagi
No of Gram Sabha Conducted in a Year	2	2	2	2
Male Attendance to Gram Sabha	76 (43.43)	90 (54.55)	80 (55.17)	125 (75.76)
Female Attendance to Gram Sabha	99 (56.57)	65 (39.39)	65 (44.83)	40 (24.24)
Total no of Persons attending Gram Sabha	175 (100)	165 (100)	145 (100)	165 (100)
Percentage of people participated in Gram Sabha	4.77	2.78	4.45	2.37
Issues related to water supply	1 Collection of water tax 2. Pipe repair 3 New pipeline connection	1 Water shortage	1 New pipeline connection 2 Water leakage	1.New water supply scheme 2 New pipe line connection
Progress of work after Gram Sabha	Work completed	Uncompleted works	Work completed	Work completed
Issues Discussed about sanitation	1 Creating awareness about latrine facility	1 Drainage repair 2 Village cleanliness	1. Creating awareness about latrine scheme 2 Clean drainage	1 Drainage cleaning 2 School latrine facility
Progress of work after Gram Sabha	Work completed	Uncompleted works	Work completed	Work not completed
Other issues discussed	1 NREGY Road repair 2 Housing Scheme	1 NREGY programme 2 Lake Pitching 3 Housing Scheme	1 NREGY programme	1 NREGY programme 2 Road Repair 3 Others new schemes
Progress of Work after Gram Sabha	Work completed	Uncompleted works	Work completed	Work completed

7.2b. Perception of Households reporting issues discussed in Gram Sabha

Table 7.1 is prepared based on GPs records. Table 7.2 presents discussions made by households on various issues related to water supply in Gram Sabha. Most of the discussion was on new pipe line connection and new schemes. Around 26 per cent people discussed about timeliness of water supply in Galagi GP. We observed from the survey that most of the households are engaged in agricultural work. They have to wait to collect water until provided by GPs. As a result household members sometimes miss important functions and lose wages because of irregularity of water supply in this GP. From the

Gram Sabha discussions it is felt that rural people are not much concerned about water quality issues (Details given in chapter 6). About 43.7 per cent people discussed about quality of water only in the Kanakur GP as there are many problems related to water supply in this GP. The reason for poor quality of water in Kanakur GP is leakage in pipe line and negligence on the part of water man to clean the tank.

Table 7.2: Discussion by Households Water Related Problems in Gram Sabha

Water Related problems	Galagi	Madkihonnihalli	Kanakur	Yarikoppa
New pipeline connection	22 (34.4)	18 (50.0)	12 (37.5)	15 (40.5)
New Scheme	20 (31.3)	18 (50.0)		
Water supply at right time	17 (26.6)			
Shortage of water supply	4 (6.3)		2 (6.3)	13 (35.1)
Behaviour of Water Men	3 (4.7)			
Borwell repair	1 (1.6)		4 (12.5)	8 (21.6)
Quality of Water			14 (43.7)	1 (2.7)
Total	**67 (100)**	**36 (100)**	**18 (100)**	**37 (100)**

Table 7.3 shows discussions made by households on sanitation related problems in Gram Sabha. Most of the discussion was on cleaning drainages, new sanitation scheme and village cleanliness. In the rural areas, although more than 75 per cent of people don't have latrine facilities they are more concerned about drainages, cleaning and village cleanliness rather than getting individual or community latrine facility.

Table 7.3: Discussion by Households on Sanitation Related Problems in Gram Sabha

Sanitation Related Problems	Galagi	Madkihonnihalli	Kanakur	Yarikoppa
Drainage and Village Cleaning	22 (84.6)	18 (60)	13 (81.3)	19 (76.0)
New Sanitation Scheme	4 (15.3)	12 (40)	3 (18.7)	1 (4.0)
Construction of drainage				3 (12.0)
Maintenance of School and Public Latrines				2 (8.0)
Total	26 (100)	30 (100)	16 (100)	25 (100)

Table 7.4 presents discussions on other issues apart from water supply and sanitation. Villagers are more concerned about road repair, housing scheme and other schemes.

Table 7.4: Discussion by Households on Other Matters in Gram Sabha

Other Problems	Galagi	Madkihonnihalli	Kanakur	Yarikoppa
Road Repair	22 (64.7)	17 (44.7)	6 (19.4)	20 (51.3)
Housing Scheme	9 (26.4)	18 (47.4)	12 (38.7)	
Street Light Problem	3 (8.8)			4 (10.2)
NREGA		3 (7.9)		
Other Schemes and village development scheme			13 (41.9)	15 (38.5)
Total	34 (100)	38 (100)	31 (100)	39 (100)

Impact of Gram Sabha Meeting

We have explained in the earlier tables the discussions made by households on various issues regarding water, sanitation and other village problems. Table 7.5 presents reaction of household members on the follow-up

or action taken by GP on issues discussed in Gram Sabha. Except Kanakur GP, others have attended to water supply problems in the selected GPs. As discussed in chapter 6, the rural sanitation problems are neglected in rural areas. **More than 70 per cent households opined that, except Yarikoppa GP, remaining GPs have not attended to sanitation problems.** Table 7.5 also explains that more than 50 per cent of households opined that, GPs have not taken action on other problems of the village after the Gram Sabha.

Table 7.5: Work Completed after the Gram Sabha

Problems	Work Progress	Galagi	Madkihonnihalli	Kanakur	Yarikoppa
Water Supply	Action taken	18 (72.0)	17 (94.4)	5 (31.3)	23 (95.8)
	Action not taken	7 (28.0)	1 (5.6)	11 (68.8)	1 (4.2)
Sanitation	Action taken		4 (22.2)	2 (12.5)	15 (62.5)
	Action not taken	25 (100)	14 (77.8)	14 (87.5)	9 (37.5)
Others	Action taken	6 (24.0)	9 (50.0)	5 (31.3)	13 (54.2)
	Action not taken	19 (76.0)	9 (50.0)	11 (68.8)	11 (55.8)

7.2c. Household's Attendance in Gram Sabha

Table 7.6 shows household's attendance in Gram Sabha during the reference year (2008-09). **More than 50 per cent households have not attended Gram Sabha.** Most of the members could not attend because of their work in agriculture. They cannot forego a day's work for attending Gram Sabha. They feel agricultural work is most important for their livelihood. More than 72 per cent of the households attended Gram Sabha in Yarikoppa GP and less than 30 per cent households attended in Galagi GP.

Table 7.6: Households Participation in Gram Sabha

GP Name	No of HHs attending Gram Sabha	No of HHs not attending Gram Sabha	Total No of HHs
Galagi	30 (29.7)	71 (70.3)	101 (100)
Madkihonnihalli	22 (45.8)	26 (54.2)	48 (100)
Kanakur	23 (50.0)	23 (50.0)	46 (100)
Yarikoppa	29 (72.5)	11 (27.5)	40 (100)
Total	104 (44.3)	131 (55.7)	235 (100)

Figure 7.1: Attendance in Gram Sabha (Sex wise)

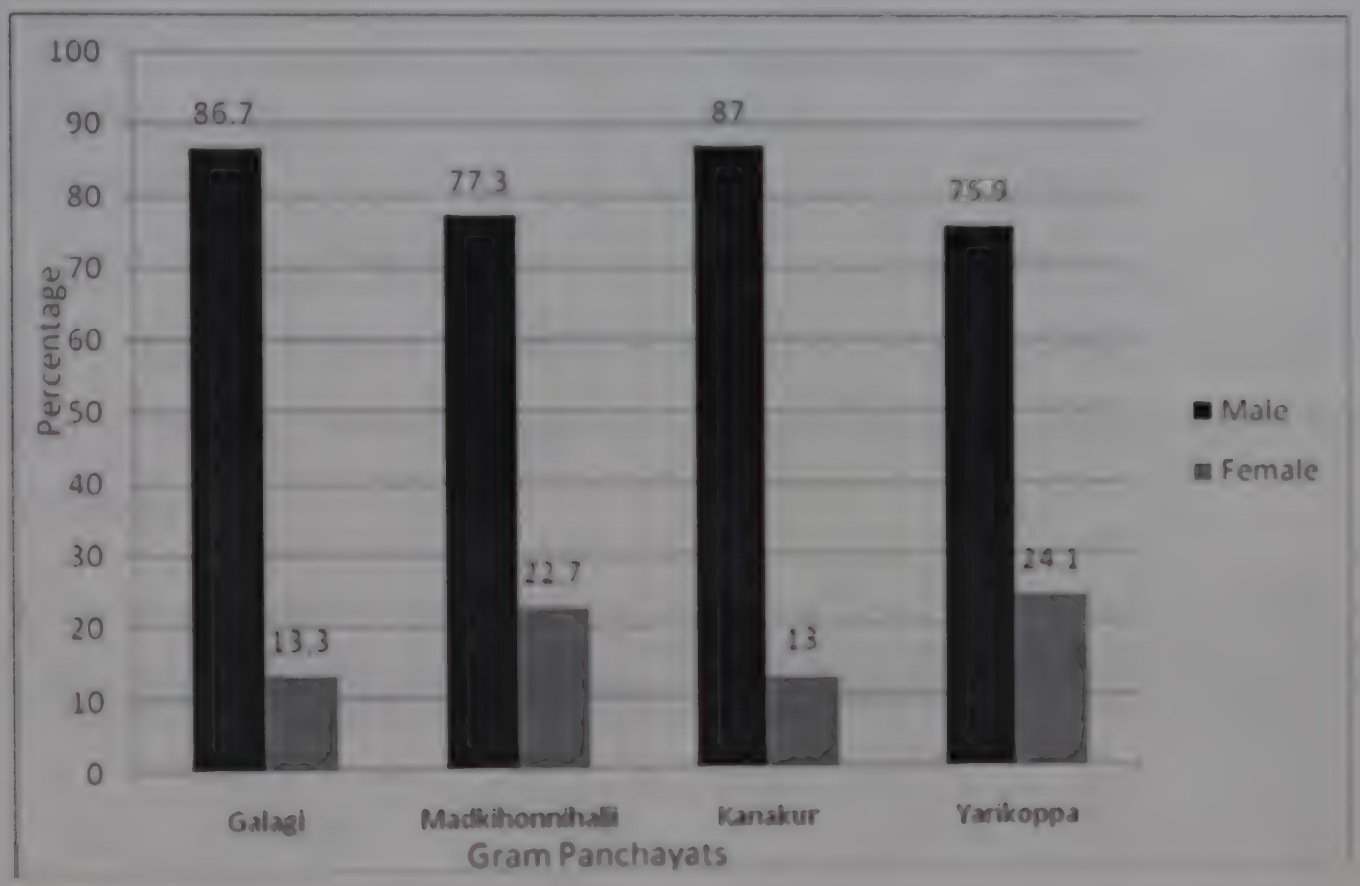


Figure 7.1 reveals that there is a wide difference between male and female participation in Gram Sabha. Less than 25 per cent female participated in Gram Sabha meeting in the selected GPs. The female participation is still low in backward GPs (Kanukur and Galagi). The reason for less participation of female in Gram Sabha is low literacy rate, male dominance and hesitation or shyness to participate in public gathering in rural areas. About 75 per cent of the participats in Gram Sabha were males during the reference year.

7.2 d. Information about Gram Sabha

Table 7.7 depicts that villagers are getting news about Gram Sabha meetings by Tam-Tam/ Jata, notice, and through GP Member. On an average 82 per cent of villagers came to know about Gram Sabha through Tam-Tam/Jata. It is easy an way for people to get information about Gram Sabha. Notice from GP and information from GP Member seems less effective.

Table 7.7: Communication Regarding Organization of Gram Sabha

GP Name	Tam Tam/ Jata	Notice	Informed by GP Member	Total
Galagi	21 (84.0)	3 (12.0)	1 (4.0)	25 (100)
Madkihonnihalli	16 (88.9)	1 (5.6)	1 (5.6)	18 (100)
Kanakur	14 (87.5)	2 (12.5)	-	16 (100)
Yarikoppa	17 (70.8)	5 (20.8)	2 (8.3)	24 (100)
Total	68 (81.9)	11 (13.3)	4 (4.8)	83 (100)

Table 7.8 shows household participation in Gram Sabha in the reference year (2008-09). About 85 per cent of households participated in both the meetings.

Table 7.8: Household's Participation by Number of Times in Gram Sabha (2008-09)

GP Name	One time	Two Times	Total
Galagi	3 (12.0)	22 (88.0)	25 (100)
Madkihonnihalli	1 (5.6)	17 (94.4)	18 (100)
Kanakur	3 (18.8)	13 (81.3)	16 (100)
Yarikoppa	5 (20.8)	19 (79.2)	24 (100)
Total	12 (14.5)	71 (85.5)	83 (100)

7.3: People's Participation in Local Organization

A. Local Participation

The local community-based organizations possess comparative advantage over outsiders in managing common property and common water resources and in arriving at specific solutions to manage collection, disposal

and recycling of solid wastes. Table 7.9 presents details about the existence of local organization in selected GPs. Self Help Groups and Youth Associations are active in all selected GPs. Kanakur and Yarikoppa GPs have village water supply and sanitation committee (VWSSC). But VWSS committee is not carrying out any activities in this GP. GPs are having other committees like bajana mandali, drama association, RSS, and Baif an NGO. Biaf NGO is operating in this part to create awareness about sanitation and effects of water in Madakihonnihalli GP. Except Baif no other local NGO has worked on water supply and sanitation in rural areas.

Table 7.9: Existence of Local Organization in Selected GPs

Name of Local Organizations	Galagi	Madkihonnihalli	Kanakur	Yarikoppa
Self Help Group	Yes	Yes	Yes	Yes
Co-operative Milk Society or Other Society	Yes	Yes	No	No
Village Water Supply and Sanitation Committee	No	No	Yes	Yes
Youth Club/Association	Yes	Yes	Yes	Yes
Caste Association	No	Yes	Yes	No
Others	Yes*	Yes**	No	Yes***

Others:* Bajana Mandali and Drama Association, ** Baif NGO, *** RSS

People's participation in local organization

Table 7.10 shows people's participation in different local organizations in selected GPs. People participated more in SHG and youth associations. Female participation is higher in SHG than male participation. and also it is found that the number of women self help groups are more than male SHG in rural areas.

Table 7.10: People's Participation in Local Organization (Sex wise)

Local Organizations		Galagi	Madkihonnihalli	Kanakur	Yarikoppa
Self Help Group	Male	29 (29.6)	17 (41.5)	19 (45.2)	8 (20.5)
	Female	69 (70.4)	24 (58.5)	23 (54.8)	31 (79.5)
	Total	98 (100)	41 (100)	42 (100)	39 (100)
Co-operative Milk Society	Male	-	1 (100)	-.	-..
	Female	1 (100)	-	-	-
	Total	1 (100)	1 (100)	-	-
Youth Association	Male	54 (73.0)	18 (72.0)	10 (83.3)	21 (80.8)
	Female	20 (27.0)	7 (28.0)	2 (16.7)	5 (19.2)
	Total	74 (100)	25 (100)	12 (100)	26 (100)
Caste Association	Male	2 (66.6)	-	-	4 (50.0)
	Female	1 (33.3)	-	-	4 (50.0)
	Total	3 (100)	-	-	8 (100)
Others	Male	4 (100)	1 (33.3)	-	2 (50.0)
	Female	-	2 (66.6)	-	2(50.0)
	Total	4 (100)	3 (100)	-	8 (100)

7.4: Village Water Supply and Sanitation Committee (VWSSC)

In order to enable community participation in the rural water supply and sanitation scheme, there is a need to create greater awareness about the nature and significance of the scheme among the rural people/users. Projects funded by external agencies like World Bank, DANIDA and Netherland have community participation, as one of the components tied to the project and beneficiaries are required to adher to this condition to avail the grants.

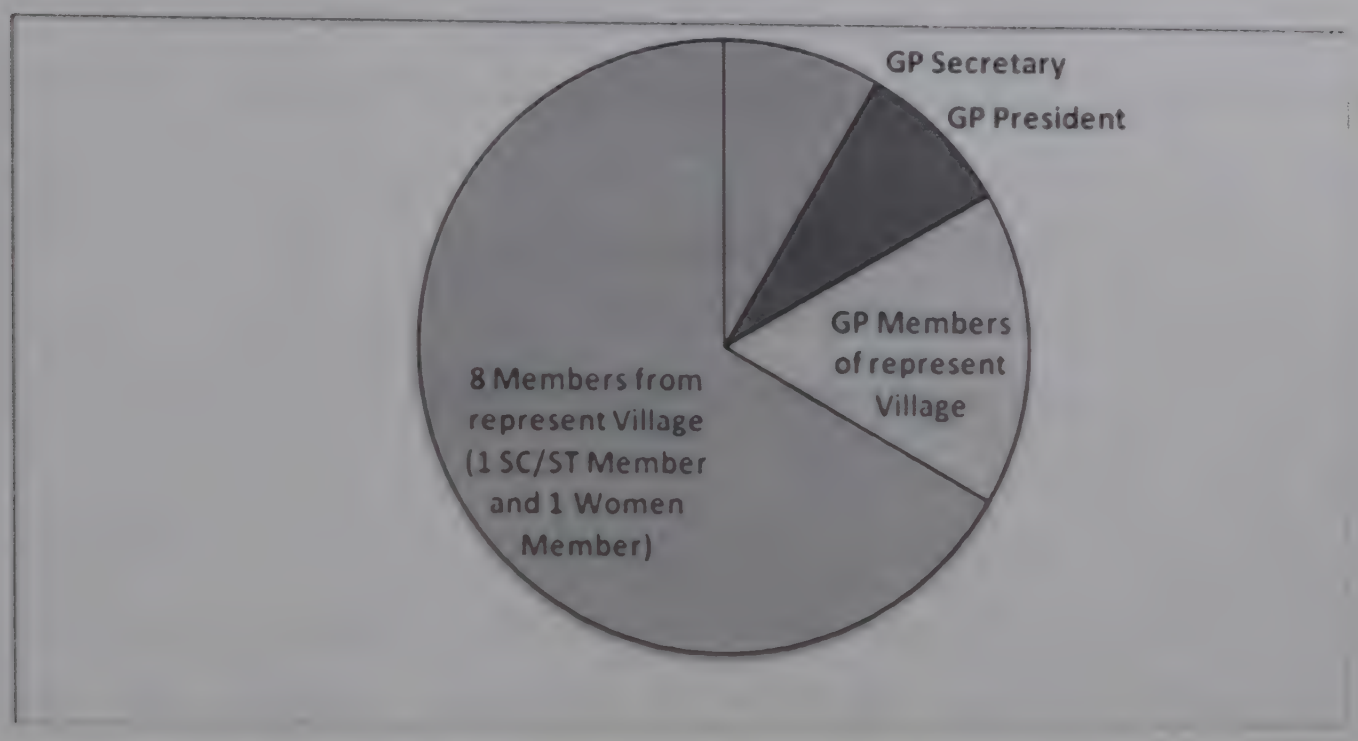
Alternative Institutions in RWSS

The alternative institution model introduced a new service delivery mechanism for the RWSS sector in the state through partnership between Gram Panchayats and management in recent years. The community driven development approach is expected to improve quality and quantity of service delivery.

In Karnataka, the community managed water supply schemes were implemented with the help of external agency including the World Bank and Netherlands. Externally aided programme includes Jal Nirmal, and internal aided programmes include Swajaladhara and Swachcha Gram. In many such programme NGOs have developed different strategy to create awareness about community participation in water supply and sanitation facility. The World Bank granted Jala Nirmal project covers 11 districts of North Karnataka.

Uttar Kannada, Belgaum, Bidar, Bijapur, Bagalkot, Dharwad, Gadag, Haveri, Gulbarga, Raichur, and Koppal districts come under Jal Nirmal Project. This scheme has contributed to increased awareness and people's participation in water supply and sanitation programme. The VWSC is representative of village community and functions as a local institution (GP) at the village level by involving in all the activities from planning to operation and maintenance. According to Assistant Engineer of Karnataka Rural Water Supply and Sanitation Board (KRWS&SB) Dharwad, "VWSS consists of both elected and selected members from the local governance (with ratio of 50:50), and the community respectively of which, 33 per cent are women. Priority has been given to the backward and minorities in the formation of the committee in accordance of their representation in the village". Only Yarikoppa and Kanakur GPs are having VWSS committee in the selected GPs. But VWSS is not carrying out any activities in these GPs. However, Kanakur GP has one more Sanitation Committee formed under the Swatch Gram, which has constructed 150 latrines with the support from households in Kavalgeri village. But, after one year they also stopped all the work because of mismanagement by the committee.

Figure 7.2: Composition of Village Water Supply and Sanitation Committee in Selected GPs



Resource Mobilization for Community Water Supply and Sanitation

The investment in water supply and sanitation has to be met both by the villagers and the State, in the ratio as given in table 7.11. After the village community and Gram Panchayat mobilize 15 per cent of an agreed amount, the tender will be taken up for water supply and sanitation (except individual latrine) works. The agreed amount has to be arranged from the GPs own resources (tax and customs).

Table 7.11: Resource Mobilization for Community Water Supply and Sanitation

Items	Community	Gram Panchayat	Scheme (World Bank through State)
Water supply	10%	5%	85%
Sanitation (Drainage and Village Cleanliness)	5%	10%	85%
Individual Latrine	Subsidy for BPL households Rs, 2000		
	Subsidy for APL households Rs 1200		

Source: KRWS&S report

Raising awareness about water supply and sanitation through public campaign

In raising public awareness on water and sanitation issues, it is important to recognize the divergence in public perception between the two. Whilst the need to improve the access of low income groups to clean water enjoys broad based support, pro poor sanitation has largely tended to be the domain of Community Based Organization (CBOs), and NGOs working closely with affected communities. Public awareness campaigns for water and sanitation need to take into account different situations, needs and circumstances of discrete user categories. This necessitates understanding of existing user perceptions about the level and quality of service, access to both water and sanitation, assessment of water and sanitation usage habits, establishment of major impediments to better access, and determination of practical and socially acceptable ways of overcoming such impediments to access. Only then an appropriate message can be designed that adequately address the role of each target group in improving access to water and sanitation for low income groups.

Grassroot organizations that have well established and regular contacts with low income groups in both formal and informal settlements have mechanisms in place of information, dissemination and awareness creation. SHG, youth associations and other groups can provide effective and direct means for spreading the message. Baif an NGO has been trying to create awareness about sanitation in Madkihonnihalli GP. Except this, the researcher could not find any effort has been made to create awareness about water supply and sanitation in selected GPs in the reference year (2008-09).

7.5: Women Participation in RWSS

In most societies, women have primary responsibility for management of household water supply, sanitation and health. Water is necessary not only for drinking, but also for food production and preparation, care of domestic

animals, personal hygiene, care of the sick, cleaning, washing and waste disposal. Because of their dependence on water resources, women have accumulated considerable knowledge about water resources, including location, quality and storage methods. Women are facing more problems related to water supply and sanitation than men in rural areas. They collect water for different household needs. Women hesitate to go out for defecation in open places (see chapter 6). Due to shyness/uneasiness most of the women go for defecation either early morning or at night. As explained in table 7.10, womens participation in self help groups is higher. But it was found that none of the SHGs were concerned about rural water supply and sanitation facility in the selected GPs. **They have never conducted any awareness programmes about the importance of individual latrine facility and village cleanliness.**

7.6: Conclusion

The Government of Karnataka aims at providing everyone with safe and sufficient water supply in rural areas. The problem is not that there is lack of knowledge about addressing these problems. Knowledge about installation and maintenance of piped water supplies and waste water removal systems for cities has developed well over the last 150 years. In the previous sections we discussed about the role of community in water supply and sanitation services at the village level portrayed through Gram Sabha, Ward Sabha and other village level community organizations such as VWSCs, SHGs, women's groups, youth associations, etc. Although water is a basic necessity of life, the notion that is imbibed in the minds of public is that its provision is the sole responsibility of the State. This is more so in the case of drinking water and sanitation.

In rural areas Gram Sabha is a powerful and democratic means of communicating villagers' needs. It is necessary that these needs are included in the developmental programmes of the GP and later realized in to works through actual implementation. But, from the discussions placed earlier, we find that only 35% of the households have participated in GS and the rate of

participation is very low (25%) in less developed Galagi GP. From the Gram Panchayat records also it is found that **only less than 5 % of the population has participated in the last Gram Sabha held (2008) in selected GPs**. If people are not participating in meetings specifically structured to discuss developmental programmes and future plans then how will they communicate their demands? How will they know that whether GP is meeting the requirements of the people?

It was also found from our field discussions that none of the village level institutions viz. SHGs, Youth/Women's clubs or VWSCs have ever placed their demands with respect to water supply and sanitation or raised their voice against inefficient services. All this indicates that village level planning for water supply and sanitation is a routine exercise, wherein the programmes designed and passed on to GPs by Centre, State and ZPs are implemented accordingly without the involvement of the community per se.

CHAPTER-8

EFFECT OF POOR WATER SUPPLY AND SANITATION

8.1: Introduction

We have discussed about poor status of sanitation in rural areas and also found that more than 50 per cent of the households are not satisfied with the quality of water supply (Details given in Chapter VI). A safe and sustainable water supply, basic sanitation and good hygiene are fundamental for a healthy, productive and dignified life. And yet many of the world's rural poor lack access to an *improved* water supply (900 million), and improved sanitation facilities (2 billion) (Joint Monitoring Programme for Water and Sanitation, 2006)[16]. As put forth by Kofi Annan, United Nations' Former Secretary-General "We shall not finally defeat AIDS, tuberculosis, malaria, or any of the other infectious diseases that plague the developing world until we have also won the battle for safe drinking water, sanitation and basic health care".

One sixth of the world's population approximately 1.1 billion people, do not have access to safe drinking water, and 2.4 billon lack basic sanitation. Six thousand children die every day from diarrhoeal diseases alone and a large proportion of diarrhoel disease in the developing world is due to poor water, sanitation and hygiene (UNICEF, 2003). The most affected people are in developing countries, living in extreme conditions of poverty, normally peri-urban dwellers or rural inhabitants. Among the main problems which are responsible for this situation are: lack of priority given to water supply and sanitation facilities, lack of financial resources, lack of sustainability of water supply and sanitation services, poor hygiene behaviors, inadequate sanitation in public places including hospitals, health centres and schools. Providing access to sufficient quantity of safe water, the provision of facilities for a sanitary

[16] Improved' water supply refers to a household connection, standpipe, and borehole, protected dug well, protected spring or rainwater collection. 'Improved' sanitation facilities refer to a simple latrine, ventilated improved pit latrine or pour-flush latrine and connection to a septic system or public sewer.

disposal of excreta, and introducing sound hygiene behavior are of capital importance to reduce the burden of disease caused by these risk factors.

The health effects of poor water, sanitation and hygiene have been underemphasized because people do not have concern about poor quality of water supply and sanitation in rural India. Unsafe and poor quality water adversely affects health status of people in rural areas.

In this chapter an attempt is made to register the extent of water borne and sanitation related illness as reported by villagers during the reference period of 2008-09 and account for the burden of these diseases in terms of treatment cost incurred by the households. These should be taken as rough estimates as they are based on self perceived morbidity. Secondly, we understand that in addition to poor water quality and sanitation there could be other risk factors responsible for the occurrence of diseases.

8.2: Incidence of Water-borne and Sanitation Related Diseases

Sixty six million people in India are estimated to be consuming ground water with unsafe levels of fluoride. Nearly 30 million people in the eastern states are estimated to be at the risk of consuming water with arsenic content higher than the acceptable levels (Kolavalli and Raju, 2003). As discussed in earlier chapters (Chapters 4 and 5) 35 per cent of the rural habitations in Karnataka state are affected by water quality problems and only 22 per cent of the households have latrine facility in rural areas. In this section, we have explained the household burden of water and sanitation related diseases in rural Dharwad, which is due to unsafe water supply and sanitation. The common diseases occurring due to unsafe water are gastroenteritis, malaria, cholera, typhoid, and viral hepatitis. Table 8.1 presents the incidence of these diseases in the state. Gastroenteritis is an acute disease with nearly 24 thousand reported cases and 200 deaths in 2001. Although the number of reported cases are very high for malaria followed by typhoid, the death cases are higher in gastroenteritis. So it can be said that the ultimate burden appears to be higher in

the case of gastroenteritis than other water borne diseases. In all the cases households have to face the burden of treatment cost, loss of income, heavy expenditure on prolonged treatment, absence to schools/colleges and reduced productive capacity on account of these diseases. This has been the case particularly with Chikungunya, which is widespread in Dharwad district in recent years (see Table 8.2). It should be noted that the figures presented in Table 8.1 are gross underestimates as the data on incidence of water-borne disease is from the Department of Health and Family Welfare, which does not include the cases reported in private health centers.

Table 8.1: Distribution of Water-borne and Sanitation Related Diseases in Karnataka (2001)

Water and Sanitation related disease	Cases (Nos.)	Death (Nos.)	Cases (%)	Death (%)	Cases/Death Ratio
Gastroenteritis	23893	198	37.91	84.97	0.83
Cholera	342	1	0.54	0.43	0.29
Malaria	197625	21	75.82	8.27	0.01
Viral Hepatitis	5438	28	8.63	12.02	0.51
Typhoid	33346	6	52.91	2.58	0.02
Total	63019	233	100.00	100.00	0.37

Source: Department of Health and Family Welfare, GOK

Table 8.2 depicts the incidence of water borne and sanitation related diseases in Dharwad district. Gastroenteritis, cold and fever and Chikungunya were major water and sanitation related diseases in Dharwad district during the year 2006. It should be noted that although more than 37500 Chikungunya cases were registered there were no reported deaths due to this disease. Malaria imposed a heavy burden as out of 479 registered cases, 10 deaths were reported.

Table8.2: Water-borne and Sanitation Related Diseases in Dharwad (2006)

Water and Sanitation related disease	Cases (Nos.)	Death (Nos.)	Cases (in %)	Death (in %)	Cases/Death Ratio
Gastroenteritis	1746	-	4.2	-	-
Cholera	5	-	0.0	0.0	-
Viral Hepatitis	120	1	0.3	7.1	0.8
Typhoid	-	-	-	-	-
Cold and Fever	1881	03	4.5	21.4	0.2
Malaria	479	10	1.1	71.4	2.1
Chikungunya	37568	-	89.9	-	0.0
Total	41799	14	100.0	100.0	0.0

Source: Report of Communication Diseases, District Health Office (DHO), Dharwad

Individual health and hygiene is largely dependent on adequate availability of drinking water and proper sanitization, therefore, there exists a direct relationship between water, sanitation and health. Table 8.3 presents the level of households' satisfaction over water supply and sanitation in the study area. Only 26.8 per cent are satisfied over sanitation facility, while around 51 per cent are satisfied about the quality of water supply. This indicates that over half of the population is deprived of safe drinking water, and three fourth do not have proper sanitation in selected GPs (details in chapter 6). Around 36 per cent of people are affected from water and sanitation related diseases in selected GPs in the last one year and moreover people have incurred a direct expenditure of around 6.7 per cent (Rs 589) of their annual per capita income on water and sanitation related diseases. The burden is higher if we include indirect cost (loss of income) resulting in a loss of 18.5% of their per capita annual income.

Table 8.3: Water and Sanitation Facility and Health Impacts in Selected GPs (As reported by the households)

Details	Percentage
Satisfaction about Water Supply	73.6
Satisfaction about Water Quality	51.5
Satisfaction about Sanitation Facility	26.8
Access to Drainage Facility	56.2
Possession of Individual Latrine Facility	21.5
Reporting of Water and Sanitation related Diseases (% of HHs)	36.2
Annual Per capita Amount Spent for treatment of Water and Sanitation related Diseases (in Rs./as %) **[Direct cost]**	589 (6.7%)
Annual Per capita Amount Spent for treatment of of Water and Sanitation related Diseases (in Rs./as %) **[Indirect cost]**	1052 (11.9%)
Annual Per capita Amount Spent for treatment of Water and Sanitation related Diseases (in Rs./as %) **[Total cost]**	1640 (18.5)
Average annual per capita income of the sample population (Rs.)	8871

People's Views on the Provision of Water in Selected GPs

People's View	a) Due to availability of hard water in some borewells the water is used for other purposes and drinking water is procured from the PWS. b) Water quality is affected by ground water depletion as a result of increased number of borewells c) By observations and spread of words the villagers feel that fluoride contamination has affected the health of people d) Considering this, a de-fluoridation unit is installed by the ZP in one of the GPs affected by fluoride contamination

Table 8.4: Details of Incidence of Water-borne and Sanitation Related Diseases and their Impact in Selected GPs (2008-09)

Particulars	Galagi	Madikihonnalli	Kanakur	Yerikoppa	Total
HH members reporting illness due to poor quality of water and sanitation (per 1000)	62	71	179	107	94
Male	62.5	41.2	63.4	36.4	54.5
Female	37 5	58 8	36.6	63.6	45.5
Type of diseases (reported) (per 1000)					
Cholera	8	--	48	--	13
Cold & Fever	12	4	13	--	9
Dysentery	21	--	9	19	14
Joint Pain*	--	--	4	--	1
Skin Problem	2	--	9	--	3
Chikungunya	19	71	96	87	56
Others	--	--	4	5	2
Frequency of Hospital Visits (Average)(Nos.)	2.0	1.8	3.5	1.9	2.4
Type of Hospitals visited					
Government	79.0	55.5	36.6	4.3	31.3
Private	21.0	44.5	63.4	95.7	68.7
Average distance to hospital (% of HHs)					
Less than 0.50 km	40.6	--	14.6	24.3	21.1
0.51 km to 1 km	6.3	--	2.4	21.6	6.1
1.01 km to 5km	15.6	--	17.1	21.6	15.8
5km to 10km	0.0	100.0	4.9		17.5
More than 10km	37.5	--	61.0	32.4	39.5
Expenditure (direct and indirect) on water and sanitation related diseases as share of per capita income (%)	14.9	14.1	20.9	20.4	18.5

*Joint Pain due to excess of fluoride content in the water (from respondent's opine in Kanakur GP)

Table 8.4 shows details of incidences of water and sanitation related diseases in selected GPs. Incidence of water and sanitation related diseases is 94 cases per 1000 person in the year 2008-2009. The rate of incidence is highest in Kanakur GP (179 cases per 1000). and lowest in Galagi GP (62 cases per 1000). Table also shows disease wise cases for Cholera, Cold-Fever, Dysentery. Joint Pain, Skin Problems, Chikungunya, etc. The incidence of

these diseases is higher in Kanakur GP, which is one of the backward GPs. Households in Kavalgere village in the Kanakur Gram Panchyat have been affected by filthy water supplied through pipes. The villagers are unhappy on account of this poor quality of water. Further, Kanakur GP does not have primary health center (PHC), and people have to go to hospitals in Dharwad or Hebballi, which are far (more than 10 km) from the village. The ZP has arranged for a medical camp once in a month for a duration of one week in this village. Two doctors and 4 nurses are made available for service in that week. As the quality of water is poor most of the people are treating the water by filtering with plain clothes or boil the water before drinking. People suffer from multiple diseases in backward GPs (Galagi and Kanakur GP). Chikungunya is one of the common diseases in all selected GPs. This disease spreads from mosquitoes and is a communicable disease. Poor sanitation facility including inadequate drainage, poor disposable of garbage, and lack of latrine facility and improper storage of water are some of the reasons for the occurrence of this disease.

Only Galagi Gram Panchayat has a Primary Health Center (PHC) among the selected GPs. More than 79 per cent of the people from this panchayat who suffered from water and sanitary related diseases have visited this government hospital (PHC).

The major burden of ill health is borne by the rural areas, where access to basic infrastructure services (water and sanitation) is poor (EPTRI, Hyderabad). Adverse health impacts of contaminated water and poor sanitation include disorder of bones, skin allergies, birth defects, premature infant death, water borne and sanitary related diseases, etc. A study on Bangalore's rural and peri-urban areas reveals occurrence of health problems like skin irritation, throat infection, vomiting, and, jaundice among children on account of poor quality of water and an increased health expenditure of about Rs 3000 per year per family (Diwakar and Nagaraj, 2002)[17].

[17] Diwakar H and N Nagaraj (2002): "Impact of water pollution and food security and environment: bearing the brunt", wasteland news, August-October.

Unsafe water and poor sanitation results in countless deaths and huge burden of disease among young children. In this chapter the researcher has tried to present a rough estimate of direct and indirect costs of water and sanitation related diseases based on households reporting of treatment costs. The direct costs include the cost of consultation, medicine and hospitalization. The indirect costs include loss of wages on account of absence from work and transport costs incurred by the patients and the accompanying persons for visiting the health care centres. Table 8.5 presents direct and indirect burden from water and sanitation related disease in selected rural areas. People spend more than 18.5 per cent of their per capita income due to water and sanitation related diseases. The indirect burden is higher than the direct burden, because indirect burden includes loss of income wages due to ill health and transport costs. The Galagi and Madakihonnihalli GPs are having government hospital facilities near to their GPs, so households' expenditure on water and sanitation diseases is less than the households in Yarikoppa and Kanakur GPs. As explained in above table (8.4) households in Yarikoppa and Kanakur GPs visit private hospitals. Obviously, a private hospital charges more than the government hospital. If Gram Panchayat provides safe water and good sanitation facilities in the villages, rural people can save money spent on treatment due to water and sanitation related diseases in the rural areas.

Table 8.5: Direct and Indirect Burden from Water and Sanitation Related Diseases

GP Name	Direct burden	(% to per capita)	Indirect burden	(%per capita)	Total (Rs)	(% per capita)	Average per capita income (Rs)
Galagi	460	6.0	679	8.9	1139	14.9	7649
Madki honnihalli	391	4.4	872	9.7	1264	14.1	8961
Kanakur	750	7.4	1367	13.5	2117	20.9	10139
Yarikoppa	765	7.4	1358	13.1	2122	20.4	10388
Total	589	6.6	1052	11.9	1640	18.5	8871

Table 8.6 shows disease wise direct and indirect burden from water and sanitation related diseases. Water and sanitation related diseases like cholera, dysentery and Chikungunya diseases appear to be dangerous than the other diseases in selected GPs. People affected by these diseases have taken an average of 6 to 9 days for recovery. If each Gram Panchayat provides safe drinking water and improves sanitation facility under their jurisdiction people can save their income and as well maintain good health which can enhance a person's ability to work and earn.

Table 8.6: Direct and Indirect Burden from Water and Sanitation Related Diseases

Sl. No.	Disease/ Illness	No of Cases	Average No of days of illness	Direct Burden per case (Rs)	Indirect Burden per case (Rs)
1.	Cholera	15	6	345	673
2.	Cold and Fever	9	3	278	473
3.	Dysentery	17	6	523	396
4.	Skin Problem	3	2	305	358
5.	Vomiting	1	2	200	400
6.	Joint Pain	1	4	1500	400
7.	Chikungunya	64	9	400	959

8.3: Relationship between Household's Satisfaction with Rural Water and Sanitation Facility and Per-capita Expenditure on Water and Sanitation Related Diseases.

In this section the researcher has examined whether the per capita expenditure on health is dependent on household's satisfaction about quality of drinking water and sanitation facility. Table 8.7 shows the relationship between households' spending on water related diseases and the per cent of households not satisfied with quality of water in the selected GPs. The 'r' value (0.273*) is found to be low positive and has significant correlation at 0.05 level. Hence, it could be generalized that if quality of water is not good people will be spending more money on water related diseases in the rural areas.

Table 8.7: Relationship between Per-capita Expenditure on Water and Sanitation Related Diseases and Satisfaction with Water and Sanitation Facility

Relationship	Selected GPs ('r' Value)
Households spending on water related diseases and not satisfied with quality of water	0.273*
Households spending on sanitation related diseases and not satisfied with sanitary facility	0.253*
Households spending on sanitation related diseases and not having individual latrine facility	0.347*

Source: Households survey data in the selected GPs

Note:* Correlation is significant at the 0.05 level (2-tailed)

Relationship between households spending on sanitation related diseases and not satisfied with sanitary facility

Relationship between households spending on sanitation related diseases and not satisfied with sanitary facility in their village is given in the above table. The 'r' value (0.253*) was found to be low positive and correlation is significant at the 0.05 level. Thus, it is observed that households not satisfied with village sanitary facility are spending higher amount on treatment due to sanitation related diseases in the selected GPs.

Relationship between households spending on sanitation related diseases and rural individual latrine facility

Table 8.7 reveals relationship between households' expenditure on sanitation related diseases and rural individual latrine facility. The 'r' value (0.347*) was found to be positive with low correlation values and is significant at the 0.05 level. Hence, it is observed that households which do not have latrine facility are spending more for sanitation related diseases in the selected GPs.

8.4: Conclusions

"Water and Sanitation is one of the primary drivers of public health. which means that once we can secure access to clean water and to adequate sanitation facilities for all people, irrespective of the difference in their living conditions, a huge battle against all kinds of diseases will be won" (Dr LE Jong-wook, Former Director-General, World Health Organization).

Safe drinking water and improved sanitation facilities are essentials inputs for a healthy human life. Health sector has to bear the burden of poor water supply and sanitation as a number of acute and chronic diseases are associated with such conditions. Gastroenteritis, Cold, Fever and Chikungunya are major diseases reported in Dharwad district, and people are spending around 18.5 per cent of their per capita income for the treatment of water and sanitation related diseases in the selected GPs. Although correlation values shown in Table 8.7 are not significant, it should be noted that households not having latrine facility are likely to spend more on treatment of sanitation related diseases. Presently the rural areas do not have adequate institutions or expertise for monitoring and surveillance of water supply programmes and none of the institutions or government agencies have taken measures to create awareness on the linkages between poor quality of water and sanitation on human health in the selected GPs. It is the responsibility of GP to create awareness about safe drinking water and the importance of sanitation among

villagers and provide safe drinking water to the public. Improved water supply and sanitation have important economic and social effects as well as health benefits. And Gram Panchayats *can play a* major role in reducing the disease burden by providing improved water supply and sanitation. Such improvements reduce child mortality and, water and sanitation related diseases in rural areas.

In addition to **three-fourth of the households not having individual latrines, the fact that half of the households are dissatisfied with the quality of water and three fourth with sanitation facility explains the risk factors associated with occurrence of water borne and sanitation related diseases.** These also indicate the necessity of appropriate intervention by GP to provide hygienic environment for the better health of the people.

Appendix 8.1: Disease-wise Direct and Indirect Burden from Treatment of Water and Sanitation Related Diseases in Selected GPs.

Disease	GP Name	Galagi	Madkihonnihalli	Kanakur	Yarikoppa
Cholera	No of Cases	4		11	
	No of days Sick	6		6	
	Average Per capita Expenditure	879		500	
Cold and Fever	No of Cases	5	1	3	
	No of days Sick	3	3	3	
	Average Per capita Expenditure	317	100	416	
Dysentery	No of Cases	11		2	4
	No of days Sick	2		2	2
	Average Per capita Expenditure	295		800	475
Skin Problem	No of Cases	1		2	
	No of days Sick	2		2	
	Average Per capita Expenditure	500		110	
Vomit	No of Cases				1
	No of days Sick				2
	Average Per capita Expenditure				200
Joint pain	No of Cases			1	
	No of days Sick			4	
	Average Per capita Expenditure			1500	
Chikungunya	No of Cases	9	17	21	17
	No of days Sick	6.5	7	9	12
	Average Per capita Expenditure	203	385	430	582
Total	No of Cases	30	18	40	22
	No of days Sick	19.5	10	26	16
	Per capita Expenditure	2194	485	3756	1257

CHAPTER - 9

MAJOR FINDINGS OF THE STUDY AND POLICY IMPLICATIONS

9.1: Introduction

Water and sanitation are basic needs of life. Safe drinking water and good sanitation facilities could make tremendous impact on the quality of life in our village, because availability of safe drinking water and sanitation facilities have direct impact on the working conditions and health of the people and their productive capacity. The drinking water and sanitation also have direct bearing on the health, and hence, the provision of these services is assumed to be the fundamental duty of any government. Developing countries have been witnessing the emergence of local institutional arrangement over the last decade in the provision of basic services. The drinking water supply and sanitation in India has also witnessed the emergence of local institutions like GP and VWSCs in the provision of safe and adequate drinking water and improved sanitation facility in the rural areas. The governments at the Central and State level have been making efforts to devolve the responsibility of the water supply and sanitation facility provisioning to the Gram Panchayats in the rural areas. In rural Karnataka, despite recognition of Gram Panchayats as an emerging crucial local level institution that would both manage and regulate water supply and sanitation facility at the village level the performance is not satisfactory, due to lack of local participation. One of the most critical dimensions of rural water supply and sanitation is participation by the local community in managing the sources and finances. As reported in this study, lack of participation has been noticed mostly in planning, location selection, maintenance and operation of rural water supply and sanitation by the Gram Panchayats in the rural areas. Nevertheless the Gram Sabha is considered as a major forum for discussing water and sanitation issues at the village level.

This chapter summarizes the findings and presents the concluding observations of the present study. Counteractive policies are also recommended for better implementation rural water supply and sanitation.

9.2: Findings of the Study

Provision of drinking water and sanitation in rural areas is the responsibility of the government, and accordingly funds are provided in respective budget. Hence, after independence of the country, the State and Central Governments have been implementing several programmes and schemes on water supply and sanitation in rural areas. The Environmental Hygiene Committee (1948-49) established by the Government recommended a comprehensive plan for the provision of water supply and sanitation so as to cover 90 per cent of the population within a period of 40 years. In 1954, the Union Health Ministry announced the national water supply and sanitation programme as part of its health schemes and made specific provision to assist the states in the implementation of urban and rural water and sanitation schemes. The government of India introduced Accelerated Rural Water Supply Schemes Programme in the year 1972-73 and Minimum Needs Programme (MNP) as a part of the 20 point programme of the country in the fifth five-year plan period. These two programmes (ARWPS and MNP) are important steps in the rural water supply and sanitation programmes. The Ministry of Rural Development and Panchayat Raj at the state level, Zilla Panchayat (ZP) at district level and Gram Panchayat at habitation levels plan for drinking water for the rural areas.

Ground water is the main source of drinking water in rural areas. It is is generally free from bacterial and mineral contamination when tapped from deep aquifers. About 97 per cent of the habitations in India and 93.8 per cent of the habitations in Karnataka have been fully covered by rural water supply. Although the coverage is more than 90 percent, about 48 per cent of rural habitations are not getting sufficient water in Dharwad district. Dharwad district depends mainly (about 90 per cent) on ground water resources for water supply in rural areas and water is supplied in the villages through piped water supply schemes, mini water schemes, and bore well with hand pumps. In the selected Gram Panchayats, a majority of the households are depending on modern sources like piped water supply schemes, mini water schemes and hand

pump/bore well for water supply and more than 73 per cent of the households are satisfied with their access to drinking water supply. **The percentage of households satisfied with access to drinking water supply is higher in developed Gram Panchayats than the households in less developed panchayats**. About 56.6 per cent of the households collect water from outside their dwelling in the selected Gram Panchayats. For majority of the households distance covered to collect water is lesser in the normal season than in summer season. More than 72.8 per cent of households walk 15 to 30 minutes to collect water in summer season. And around 54.5 per cent of the rural households wait for 5 to 15 minutes to collect water. Women in most of the rural households take the burden of collecting water in the selected Gram Panchayats.

Water quality has emerged as one of the issues in the provision of rural drinking water supply. More than 13 per cent of rural habitations have been facing water quality problems in India. **Above 37 per cent of rural habitations in Karnataka are affected by water quality problems due to excess iron, followed by excess fluoride, excess TDS and Nitrate.** Bangalore and Gulabarga divisions have more water quality affected regions. The coastal districts like Dakshina Kannada (9.56 %), Udupi (4.11 %) and Uttar Kannada (6.56%) are less water quality affected districts. In total about 51 per cent of households reported satisfaction over quality of water in the selected Gram Panchayats. The percentage of households satisfied with water quality is higher in developed GPs than those in backward Gram Panchayats. People in rural areas are not much concerned about the quality of water and treatment of drinking water. Although they know that water is polluted people do not treat water in rural areas. More than 80 per cent of the households have not been using treated water in the selected Gram Panchayats.

According to 2001 Census, 21.9 per cent of the rural families had access to toilets in India. Individual household latrine coverage has more than doubled, from 21.9 per cent to 57 per cent during the year 2001 to 2008. Kerala had the highest household sanitation coverage at 78.86 per cent and Orissa had lowest household sanitation coverage at 4.39, among all states in India. In

2007, the household sanitation coverage of Karnataka was 22.19 per cent and it was far behind the national level. Divisions like Bangalore and Mysore were having higher latrine facility compared to State level. The Belgaum and Gulabarga divisions were having latrine facilities far below the State level. Districts like Gulabarga, Koppal, Bijapur, Raichur, Hasan, Bagalkot , Belgaum, Chitradurga, Haveri, Mandya, Uttarkannda, Dharwad, Bellary, Davangare, Chamaraj Nagar, Gadag, Bidar and Mysore were having less coverage of latrine facility and Districts like Kolar, Bangalore Rural, Tumakur, Chikmagalur, Bangalore, Udupi, Shimoga, Kodagu and Dakshina Kannada are advanced in household sanitation coverage as compared to state level. Dakshina Kannada had the highest household sanitation coverage at 64.1 per cent and Gulabarga had lowest household sanitation coverage at 3.0 per cent among all districts in Karnataka.

According to GP records, about 23 per cent households have individual latrine facilities in the selected GPs, out of which GPs in Dharwad taluk have higher coverage of latrine facility as compared to those in Kalaghatagi taluk. But, our field study shows that only 21 per cent of rural households are covered with a latrine facility in selected Gram Panchayats. **Further among these 21 per cent households only 67.3 per cent are using latrine facility although the facility exists in the house.** This indicates poor awareness and negligence for personal hygiene and public health.

Rural households are not only spending their valuable time to collect water, but are also spending time going out for defecation. About 53 per cent of household members walk 0.25 km to 0.50 km to go for open defecation and around 14 per cent of household members walk 0.50 km to 1 km. Majority of rural households (especially adult women) opine that going out for latrine is very difficult in rainy season. The economic problem, scarcity of place, shortage of water, staying in a rented house and lack of interest in constructing the latrine are the main reasons for not constructing latrine in rural areas.

Some of the schools in the selected Gram Panchayats do not have latrine facility because of scarcity of place and the location of the school near temple.

Although all Gram Panchayats received grant for community latrines, only Kanakur Gram Panchayat has a community latrine facility, which was constructed 5 years ago. But due to lack of maintenance by the Gram Panchayats households are not using the latrine now. Other GPs have sent back the grant because of the scarcity of space to build the latrines.

It is well known that there is rural-urban disparity in the provision of social services. Drinking water and sanitation is not an exception to this trend. The government spends less than 30 per cent for rural water supply and sanitation. The percentage of state expenditure in the financing on water and sanitation is more than 87 per cent, while that of Central Government was less than 13 per cent during the year 1991-2006. The Central Government schemes, externally funded schemes and state government schemes are under taken to meet the water supply and sanitation requirement at the rural areas. The share of expenditure on rural water supply during 2003-07 was 52.53 per cent by the Central Government and 47.47 per cent by State Government. The provisions made under housing, sanitation and Sampoorna Grameen Rozgar Yojana schemes, statutory development grants and own sources are the main sources of income of Gram Panchayats. Generally, externally funded projects have plopped in bringing about effective water supply and sanitation with co-operation by GPs in the rural areas. But, in Yarikoppa Gram Panchayat, the Jalanirmal project funded by World Bank has not yet been implemented although the GP has received funds and has also collected contributions from a few households.

According to government notifications every GP has to maintain water supply sources through tax collection from households. In reality, the cost of O&M is much higher than the tax collected from the households. **Only 25 per cent of water tax is collected in the selected Gram Panchayats.** On account of this gap in demand and collection, Gram Panchayats are unable to carry out operation and maintenance of rural water supply and sanitation facility in a satisfactory way.

The study shows that around 29 per cent of the households are willing to pay more for adequate water supply. The households in developed taluk are ready to pay higher amount to get better water supply than those in backward taluk GPs. In the selected GPs, households are willing to pay on an average Rs 20 extra for securing reliable water supply. One important objective of Millennium Development Goals is to cover villages with 100 per cent latrine facility by 2011. As mentioned above only 21 per cent of the households are covered by latrine facility in selected GPs and around 32.8 per cent households' are willing to pay to have individual facilities. **More than 24 per cent of the households were not willing to pay for individual latrine due to lack of space to construct latrine.** The households, which are economically backward and facing problems with **scarcity of place to construct latrine are willing to pay for community latrine and only 26 per cent of the households are willing to pay for better services of community latrine.** About 46 per cent of the households are unwilling to pay for community latrine as they are **worried about the maintenance of latrines by the GPs and other institutions.**

The State Government transferred many of the development functions and allocates 35 to 40 per cent of its plan funds to the local elected bodies. The growing concern over the inadequate coverage of drinking water supply in Karnataka led the State Government to pursue the local bodies to take part is resolving drinking water and sanitation problem at local level.

In the current scenario people complain either to water man or GP directly as regards water and sanitation problems in rural areas. They should discuss water and sanitation problems in Gram Sabha and Ward Sabha. The primary responsibility of the provision of drinking water and sanitation in rural areas rests with Gram Sabha and as well with Ward Sabha. This function has been assigned to the Gram Sabha under section 7 of the Karnataka Panchayat Raj Act, 1993.

From the village records and by observations it is found that in Gram Sabhas villagers discuss new pipeline connection for households, repair of old pipelines and maintenance, shortage of drinking water especially in summer

season, drainage construction and repair of old drainage, construction of school latrine, beneficiaries' selection for different schemes, etc. The lack of time, improper timings of the meeting, and importantly lack of attendance of women in Gram Sabha reflect factors responsible for low participation and poor management of water supply and sanitation in the selected villages. GPs are unclear with their roles at times and sometimes are not able to efficiently play their role due to lack of finance or situations that arose beyond their capacities. making them helpless. Some GPs are not able to give good water and sanitation facilities due to poor co-ordination between ZP, and TP and local level politics.

Communities in the realm of water supply and sanitation play an important role in determining effective and efficient water and sanitation facilities. The VWSC is representative of the village community and functions as a local institution (GP) at the village level involving all the activities related to water and sanitation from planning to operation and maintenance. **But, not even a single VWSC is working properly in selected GP.** The SHGs. women's groups and youth associations are effective means for community mobilization. The women especially educated are more concerned about the cleanliness of their surroundings. But, none of these agencies and women's groups have played any role in planning, improving or sustaining the programmes related to water supply and sanitation in selected GPs.

In terms of water supply and sanitation it can be concluded that GPs have failed to mobilize community participation and even failed to sustain the programmes created with the help of Government and external agencies.

Gastroenteritis, Cold and Fever and Chikungunya were the major water and sanitation related diseases reported in Dharwad district for the year 2006. More than 37500 Chikungunya cases were registered in the district in 2009. Around 36 per cent people reported illness due to water and sanitation related diseases in selected GPs during 2008-09. Water and sanitation related diseases like cholera, dysentery and chickengunya diseases are dangerous than other diseases in selected GPs. The indirect costs are higher on an average as they have taken 6-9 days to recover. **People have spent more than 18.5 per cent of**

their annual per capita income for water and sanitation related diseases. The indirect burden is higher than the direct burden.

The fact that more than 67% of the households are not willing to pay for individual latrine and willingness to pay a meager amount of less than Rs. 2000 by the remaining 23% indicates how difficult it is to fulfill even half of the target of 100% coverage of latrine facility by 2011 in rural areas as specified under Millennium Development Goals. In the case of individual latrines, the unplanned hub like structure of rural households provides very little scope for the construction of latrines within the houses. **As such it becomes necessary to construct user paid community latrines in each village with proper planning, community involvement and motivation.** For sustained and large scale usage it is necessary that they are built with proper provision made for water supply, space, ventilation and privacy.

9.3: Policy Implications/Suggestions for Intervention-

- Government has to continue implementation of various programmes and introduce new schemes to facilitate the provision of safe water and sanitation facility in the rural areas.
- The State Government has to transfer all small rural water supply and sanitation schemes within the boundary of a GP to respective local bodies with associated power to collect water user charges.
- The adequacy of water supply is not only important but, also the quality of water supply services by the GP is very important. Therefore, GP has to improve the quality of water and sanitation facility within its jurisdiction.
- The community, local organizations and NGOs have to participate frequently in Gram Sabhas and raise their voices on inadequate supply of water and poor sanitation facility.
- All political parties have to be more concerned about water supply and sanitation and try to get more schemes and programmes for their GPs.

They should carefully examine financial mismanagement and illegal usage at the GP level.

- Gram Panchayat has to join hands with VWSCs, which are inactive in all the GPs and take more initiative for collecting water taxes with the help of GP members.
- Gram Panchayat has to create awareness about recharging of water from rain water harvesting; de-silting of ponds and other innovative mechanisms to increase the availability of water sources. Traditional sources should not be neglected and rejuvenated in all the villages.
- Government has to entrust the construction of community latrines to a competitive agency, which can take up the work only in consultation with GP. Gram Panchayat, local organization and NGOs have to create more awareness about sanitation schemes, use of individual latrine and hygiene in the rural areas and the Government has to increase subsidy for individual latrine facility for the rural households.
- Fluoride content in water could cause long term harmful effects, which the people have not yet realized. Therefore, there is a need for trained local personnel in maintaining and managing the treatment plant at village level. Quality problem as a whole should be handled with a planned approach beginning from identification to completion.
- Gram Panchayat has to maintain water supply and sanitation facility in the village level and also has to train water man and sweeper for cleaning water and maintaining sanitation facility in all the villages under the GPs.
- Unless GPs are gritty on collecting taxes and user charges from every household for the services provided by them, it is impossible to bring in improvement in the provision of services, maintenance of assets and sustainability of the programme. By not paying taxes and user charges people lose the power to question the accountability of the GPs. Therefore, the Government has to devise an effective mechanism to

empower GPs to collect 100% tax and user charges for better service delivery in villages.

Recent Updates in Rural Water Supply and Sanitation:

Rural Water Supply:

According to Government of Karnataka notification (GP/32/RWS (5) 2008 Bangalore, Date 26.10.2010), separate department would be launched for rural water supply (like urban water supply board) in every district. This department would be receiving funds from central, state and external funding agencies. This Board will come into existence from April 11 2011, and will be responsible for construction of new sources, water quality testing, awareness programme for water supply, operation and maintenance. At present, Gram Panchayat is taking care of operation, maintenance for water supply and collecting water tax. The programmes of external funding agencies are implemented under Karnataka Rural Water Supply and Sanitation Board. Further, every Zilla Panchayat has various sections viz. Central and State schemes section, technical and engineering section, etc. According to recent notification issued by Government of Karnataka every district will have two to three rural water supply boards. In Dharwad district there will be two boards, one will be in Dharwad (head quarter) which includes Navalagund Taluk. Hubli will be another head quarter and it includes Kundgol taluk and Kalghattagi taluk.

Rural Sanitation:

According to the new guidelines the subsidy amount for individual latrine will increased from Rs 1200 to Rs 3000 under the Total Sanitation Campaign (TSC) programme. During the primary survey it was found that households received subsidy amount of Rs 1200 and Rs 1500 which later was increased to Rs 2500. And currently it is Rs 3000. According to new notifications (GP/44/EGY/06, Date: 16.12.2010) Government of India was included construction of latrine under MGNREGA programme. According to this programme Rs 7000 will be spent on each individual latrine. Thirty days of labour work worth Rs 3750 would be spent under MGNREGA. While, Rs 3000 would be spent under TSC. Beneficiaries have to contribution only Rs. 250 as their share. This facility is likely to increase the coverage of latrine facilities in the rural areas.

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Study on *"Role of Gram Panchayat in Rural Water Supply and Sanitation: A case study of Dharwad District, Karnataka"*

GRAM PANCHAYAT INFORMATION SURVEY

Questionnaire ID

☐☐☐

GRAM PANCHAYAT IDENTIFIERS

District :_____ Code:_____
Taluk/Block :_____ Code:_____
Gram Panchayat:_____ Code:_____

Name of the GP Headquarter Village:_____ Code:_____

Number of Villages covered by GP: _____

Number of Wards covered by GP: _____

Number of Village Water Supply Committee Covered by GP: _____

Investigators Name: _____ Date Completed: ____/_____/_____

Researcher Name: Narayana Billava Date Completed: ____/_____/_____

SECTION A: GRAM PANCHAYAT MEMBERSHIP INFORMATION

A1. GRAM PANCHAYAT MEMBERSHIP DETAILS FOR CURRENT MEMBERS

S.No	NAME *(Start from President)*	ELECTED UNOPPOSED?* *(For president and Vice president, this refers to their election as a GP member.)*	AGE	POSITION *Use code to WRITE the response: 1=GP president, 2=vice president, 3=member*	SEX *Use code to WRITE the response: 1=Male, 2=Female*	CASTE *Use code to WRITE the response: 1=SC, 2=ST, 3=BC, 4=Other*	RELIGION *Use code to WRITE the response: 1=Hindu, 2=Muslim, 3=Christian, 4=Other*	EDUCATION *Use code to WRITE response:* *1= Illiterate* *2= Literate, no school* *3= Primary school* *4= Middle School* *5= High School* *6=Diploma or Vocational training* *7=Pre-degree* *8= Degree or above*	RESERVATION *Use code to WRITE response: 1=SC, 2=ST, 3=BC, 4=Woman, 5=SC Woman, 6=ST Woman, 7=BC Woman, 8=Not Reserved*
1.		☐ Yes ☐ No							
2.		☐ Yes ☐ No							
3.		☐ Yes ☐ No							
4.		☐ Yes ☐ No							
5.		☐ Yes ☐ No							
6.		☐ Yes ☐ No							
7.		☐ Yes ☐ No							
8.		☐ Yes ☐ No							
9.		☐ Yes ☐ No							

S.No	NAME *(Start from President)*	ELECTED UNOPPOSED?* *(For president and Vice president, this refers to their election as a GP member.)*	AGE	POSITION *Use code to WRITE the response: 1= GP president 2=vice president 3=member*	SEX *Use code to WRITE the response: 1=Male, 2=Female*	CASTE *Use code to WRITE the response: 1=SC, 2=ST, 3=BC, 4=Other*	RELIGION *Use code to WRITE the response: 1=Hindu, 2=Muslim, 3=Christian 4=Other*	EDUCATION *Use code to WRITE response: 1= Illiterate 2= Literate, no school 3= Primary school 4= Middle School 5= High School 6=Diploma or Vocational training 7=Pre-degree 8= Degree or above*	RESERVATION *Use code to WRITE response: 1=SC, 2=ST, 3=BC, 4=Woman, 5=SC Woman 6=ST Woman, 7=BC Woman, 8=Not Reserved*
10.		☐ Yes ☐ No							
11.		☐ Yes ☐ No							
12.		☐ Yes ☐ No							

A2: ONLY FOR PRESIDENT AND VICE PRESIDENT:

POSITION	WAS THE ELECTION OF PRESIDENT/ VICE PRESIDENT UNOPPOSED?	WAS THIS POST A RESERVED SEAT?
PRESIDENT	☐ Yes ☐ No	☐ Yes ☐ No
VICE PRESIDENT	☐ Yes ☐ No	☐ Yes ☐ No

SECTION B: SOURCES OF FINANCE

B1. INCOME AND EXPENDITURE DETAILS: 2005-2008

S.No	Name of Account	Whether Account Maintained?	Income in Rupees			Expenditures in Rupees		
			2005-2006	2006-2007	2007-2008	2005-2006	2006-2007	2007-2008
1.	Own Resources	☐ Yes ☐ No						
2.	Statutory (Fixed) Development Grant	☐ Yes ☐ No						
3.	12th Finance Commission Grant	☐ Yes ☐ No						
	Scheme Wise Grants (*Write Names*)							
1.	SGRY	☐ Yes ☐ No						
2.		☐ Yes ☐ No						
3.		☐ Yes ☐ No						
4.		☐ Yes ☐ No						
	Any Other (Write Names)							
1.		☐ Yes ☐ No						
2.		☐ Yes						

S.No	Name of Account	Whether Account Maintained?	Income in Rupees			Expenditures in Rupees		
			2005-2006	2006-2007	2007-2008	2005-2006	2006-2007	2007-2008
		☐ No						
3.		☐ Yes ☐ No						
4		☐ Yes ☐ No						
5		☐ Yes ☐ No						
6		☐ Yes ☐ No						
7		☐ Yes ☐ No						
8		☐ Yes ☐ No						
9		☐ Yes ☐ No						
10		☐ Yes ☐ No						

B2: DETAILS OF "OWN RESOURCES"

S.NO	SOURCE	2005-2006		2006-2007		2007-2008	
		DEMAND	COLLECTION	DEMAND	COLLECTION	DEMAND	COLLECTION
1.	House Tax						
2.	Cess (Education, Health and Shops Tax)						
3.	Water Tax						
4.	Fines and Penalties						
5	Others (write name)						
6							
	Total						

B3: PROGRAMMES IMPLEMENTED BY THE GRAM PANCHAYAT FROM 'OWN SOURCES' in last One Year (2007-08)

S. NO	DETAILS OF ACTIVITIES/WORKS UNDERTAKEN	SOURCE OF FUND	EXPENDITURE (RS.)	REMARKS
1.	**Water Supply Related Works (Specify)**			
	1. Water Men Salary			
	2.			
	.			
	3.			
	4.			
2.	**Sanitation Related Works (Specify)**			
	1.			
	2.			
	3.			

S. NO	DETAILS OF ACTIVITIES/WORKS UNDERTAKEN	SOURCE OF FUND	EXPENDITURE (RS.)	REMARKS
	4.			
3	**Any other** (for example:)- Construction of Community TV Hall, Construction of library, Tree plantation, Market facilities – Shandy)			
	1.			
	2.			
	3.			
	4.			

B4: SGRY DETAILS

S.No	WORKS UNDERTAKEN	EXPENDITURE IN RUPEES					
A.	COMMON WORKS (Main focus on water and sanitation works)	2005-2006	Man days	2006-2007	Man days	2007-2008	Man days
1							
2							
3							

S.No	WORKS UNDERTAKEN	EXPENDITURE IN RUPEES					
A.	COMMON WORKS (Main focus on water and sanitation works)	2005-2006	Man days	2006-2007	Man days	2007-2008	Man days
4							
5							
B.	WORK UNDERTAKEN IN SC/ST COLONY						
1							
2							
3							
C	SC/ST WORKS IN THEIR LAND (INDIVIDUAL) AND OTHER INDIVIDUAL BENEFITS						
1							
2							
3							

B5: 12th FINANCE COMMISSION GRANT DETAILS

S.No	WORKS UNDERTAKEN	EXPENDITURE IN RUPEES		
A.	Water Supply Related Works (Specify)	2005-2006	2006-2007	2007-2008
1				
2				
3				
4				
5				
B.	Sanitation Related Works (Specify)			
1				
2				
3				
C	Any other (Specify)			
1				
2				
3				

SECTION C: ACTIVITIES AND FINANCES

C1. NUMBER OF DRINKING WATER SUPPLY SOURCES IN GP

Sl. No	Water Scheme / Villages Name	Population	No of HHs	Main Sources of Drinking Water Use code 1. MWS, 2. PWS, 3. Hand pumps/ Bore well, 4. Others (Specify)	No of MWS	No of PWS	No of Hand Pumps	No of Bore Well	How Much Drinking Water Supply by GP (per day)	LPCD of Water Consume	Other Sources (Specify)
1											
2											
3											
4											
5											

C2. NUMBER OF TOILETS FACILITY IN GP

Sl. No	Types of Latrines / Villages Name	Individuals Latrines	Anganwadi			Primary School			Community latrines			Others (Specify)		
			No of Latrines	Male	Female	No of Latrines	Male	Female	No of Latrines	Male	Female	No of Latrines	Male	Female
1														
2														
3														
4														
5														

C3. FILL THE TABLE BELOW FOR RURAL WATER SUPPLY PROGRAMMES UNDERTAKEN BY GP (Including Internal and External Assistance (World Bank scheme))

Sl. No	Works Undertaken (Write name of works undertaken in the rows below)	Name of Scheme	EXPENDITURE (in Rs) AND BENEFICIARIES (In Nos)					
			2005-2006		2006-2007		2007-2008	
			Expenditure	No. of Beneficiaries	Expenditure	No. of Beneficiaries	Expenditure	No. of Beneficiaries
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

C4. FILL THE TABLE BELOW FOR SANITATION PROGRAMMES UNDERTAKEN BY THE GP (Including Internal and External Assistance)

Sl. No	Works Undertaken (Write name of works undertaken in the rows below)	Name of Scheme	EXPENDITURE (in Rs) AND BENEFICIARIES (In Nos)					
			2005-2006		2006-2007		2007-2008	
			Expenditure	No. of Beneficiaries	Expenditure	No. of Beneficiaries	Expenditure	No. of Beneficiaries
1								
2								
3								
4								
5								
6								

D. ACTIVITIES DEVOLVED TO THE GRAM PANCHAYAT

S.NO.	STATUTORY ACTIVITIES OR PROGRAMMES DEVOLVED	HAVE ACTIVITIES BEEN UNDERTAKEN BY FOR THESE PROGRAMMES?	ARE FUNDS AVAILABLE FOR THIS ACTIVITY?
1.	GRAM PANCHAYAT LIBRARY	☐ Yes ☐ No If Yes, List activities under this head: 1._____ 2._____ 3._____	☐ Yes ☐ No
2.	SOCIAL FORESTRY	☐ Yes ☐ No If Yes, List activities under this head: 1._____ 2._____ 3._____	☐ Yes ☐ No
4.	OTHER RURAL DEVELOPMENT PROGRAMS OR SCHEMES ***(EXCLUDE , activities under taken 11th finance commission Grant and Statutory Grants(Development***	☐ Yes ☐ No If Yes, List activities under this head:	☐ Yes ☐ No

S.NO.	STATUTORY ACTIVITIES OR PROGRAMMES DEVOLVED	HAVE ACTIVITIES BEEN UNDERTAKEN BY FOR THESE PROGRAMMES?	ARE FUNDS AVAILABLE FOR THIS ACTIVITY?
	grant)	1._____ 2._____ 3._____ 4._____	
5.	NON CONVENTIONAL ENERGY	☐ **Yes** ☐ **No** **If Yes, List activities under this head:** 1._____ 2._____ 3._____	☐ Yes ☐ No
6.	SANITATION REALATED	☐ **Yes** ☐ **No** **If Yes, List activities under this head:**	☐ Yes ☐ No

S.NO.	STATUTORY ACTIVITIES OR PROGRAMMES DEVOLVED	HAVE ACTIVITIES BEEN UNDERTAKEN BY FOR THESE PROGRAMMES?	ARE FUNDS AVAILABLE FOR THIS ACTIVITY?
		1._____ 2._____ 3._____	
7.	HEALTH CARE AND EDUCATION ***(example, formation of SDMC or health committees, upkeep of sanitation, mobilization for immunization camps, supervision of anganwadi and ANM workers)***	☐ Yes ☐ No If Yes. List activities under this head: 1._____ 2._____ 3._____	☐ Yes ☐ No
8.	RURAL WATER SUPPLY (Excluding Repair and Maintenance)	☐ Yes ☐ No If Yes, List activities under this head: 1._____ 2._____	☐ Yes ☐ No

S.NO.	STATUTORY ACTIVITIES OR PROGRAMMES DEVOLVED	HAVE ACTIVITIES BEEN UNDERTAKEN BY FOR THESE PROGRAMMES?	ARE FUNDS AVAILABLE FOR THIS ACTIVITY?
		3._____	
9.	OTHER **Specify**:	☐ Yes ☐ No If Yes, List activities under this head: 1._____ 2._____ 3._____	☐ Yes ☐ No

SECTION E. INSTITUTIONS AND PROCESSES

E1. Particulars regarding Gram Sabha, Ward Sabha and Jamabandi

S.No		GRAM SABHA	GP GENERAL BODY MEETING	JAMABANDI
1	Number of meetings held in the last one year (Mention Last Meeting Month and Year)			
		(M M)/ Y Y Y Y	(M M)/ Y Y Y Y	(M M)/ Y Y Y Y
	LAST MEETING			
2	Attendance	Number of Men : _____ Number of Women: _____	Number of Men : _____ Number of Women: _____	Number of Men : _____ Number of Women: _____
3.	Main Issues Discussed *(record verbatim by each issue)* *(Especially on water supply and sanitation facility)*	[redacted]		
4.	Follow up actions taken *(record verbatim by each issue)* *(specially on water supply and sanitation facility)*			

E2: BOOK KEEPING

S. No.	NAME OF THE BOOK / REGISTER	ARE YOU MAINTAINING THE FOLLOWING REGISTERS?
1.	Collection Record	☐ Yes ☐ No
2.	Tax and other revenues record	☐ Yes ☐ No
3.	Cash book	☐ Yes ☐ No
4.	Bank pass book	☐ Yes ☐ No
5.	Bill book for tax and other revenues collection	☐ Yes ☐ No
6.	Bill book for mean pasi (fish) rent	☐ Yes ☐ No
7.	Auction Register	☐ Yes ☐ No
8.	Condemned Articles register	☐ Yes ☐ No
10	Scheme register	☐ Yes ☐ No
11.	Wages register	☐ Yes ☐ No
12	Income and expenditure register	☐ Yes ☐ No
13.	Cheque book	☐ Yes ☐ No
14.	Village Panchayat form No. 1 to 31	☐ Yes ☐ No

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Questionnaire ID

☐☐☐

VILLAGE INFORMATION SCHEDULE

Village Identifiers

District :_____ Code:_____
Taluk/Block :_____ Code:_____
Gram Panchayat :_____ Code:_____
Village name :_____ Code:_____

(Census) village serial No:_____

Village Summary Information

How many GP members does the village have? (NUMBER) _____

Does any of the following belong to the Village? 1=GP President 2= GP Vice President 3=Ward Member _____

Does this village come under KuGrama-Suvarna Grama Yojana? ☐ Yes ☐ No

Total number of SC/ST hamlets in the village (NUMBER) _____(SC) _____(ST)

Investigators Name: _____ Date Completed: ____/_____/_____

Researcher Name: _____ Date Checked: ____/_____/_____

A. DEMOGRAPHICAL AND OTHER BASIC INFORMATION

A1. DEMOGRAPHICAL INFORMATION

S. No	CASTE NAME *Record the names of castes and then write codes in the column. use codes : 1=sc 2=st 3=0bc 4=general 5= minority 6=other*		NUMBER OF HOUSEHOLDS	WHERE DO THEY LIVE? *Use codes* *1= Spread out in main village, 2=Separate hamlet in main village, 3=In hamlet away from main village*	NUMBER OF HOUSEHOLDS THAT LIVE IN A KACHCHA DWELLING?	NUMBER OF HOUSEHOLDS WITH BPL CARDS
	CASTE NAME	CODE				
1						
2						
3						
4						
5						
6						
7						
8						

A2: BENEFICIARY INFORMATION FOR CURRENT YEAR

S. No	CASTE NAME *copy from table A1*		NUMBER OF BENEFICIARIES UNDER HOUSING SCHEMES	NUMBER OF BENEFICIARIES UNDER BHAGYA JYOTI SCHEMES	NUMBER OF BENEFICIARIES UNDER WATER SCHEME	NUMBER OF BENEFICIARIES UNDER SANITATION SCHEME	NUMBER OF BENEFICIARIES UNDER ANY OTHER SCHEME (Record for any major program in the village) Specify Program: _____
1	CASTE NAME	CODE					
2							
3							
4							
5							
6							
7							
8							
9							

SECTION B: LAND AND LIVESTOCK INFORMATION

B1: AGRICULTURE LANDS

TOTAL AREA OF CULTIVATED LAND IN THE VILLAGE	ACRES	MAIN SOURCE OF IRRIGATION (Use code)	PRICE PER ACRE
Irrigated			
Non-irrigated			

1. Tank or Pond, 2. River, Canal, and Lake 3.Well, 4.Bore Well, 5. Others____

B2. LIVESTOCK

S. No.	SOCIAL GROUP	DO ANY HOUSEHOLDS IN THE COMMUNITY OWN THE FOLLOWING LIVESTOCK *(check all that apply) (check as yes if this number of household is more than 1)*	WATER SOURCES USED FOR LIVESTOCK (Use Code) 1.Modern Source, 2.Traditional Source	PREDOMINANT METHOD OF FEEDING COWS AND BUFFALOS *write code grazing =1; stall feeding=2; any other=3*
1.	SC	☐ Cows ☐ Buffaloes ☐ Goats Sheep ☐ Poultry ☐ Other Specify Other :_____		
2	ST	☐ Cows ☐ Buffaloes ☐ Goats Sheep ☐ Poultry ☐ Other Specify Other :_____		
3.	OBC	☐ Cows ☐ Buffaloes ☐ Goats Sheep ☐ Poultry ☐ Other Specify Other :_____		
4.	Minority	☐ Cows ☐ Buffaloes ☐ Goats Sheep ☐ Poultry ☐ Other Specify Other :_____		
5.	Other	☐ Cows ☐ Buffaloes ☐ Goats/Sheep ☐ Poultry ☐ Other Specify Other :_____		

Use codes: 1. Modern Sources: 1. Bore Well/ Hand Pump, 2. MWS, 3. PWS 4. Other
2. Traditional Sources: 1.Well, 2. Tank or pond 3. River, Canal, and Lake 4. Others

SECTION C: LIVELIHOODS & LABOR MARKET

C1: LIVELIHOODS BY CASTE

Sl. No	SOURCES *Fill Row wise for each social group*	SOCIAL GROUPS									
		SC		ST		OBC		Minority		Other	
Fill the percentage OR number of households who pursue the following as their dominant occupation											
		Number	%	*Number*	%	*Number*	%	*Number*	%	*Number*	%
1	Agriculture										
2	Agricultural Labor										
3	Non-agriculture Labor										
4	Shops, Business										
5	Salaried employment										

C2..LABOR MARKET

Sl.No	PARTICULARS		Current Year
1.	Adult male wage rate per day	Peak season Rupees per day	
2.		Lean season Rupees per day	
3.	Adult female wage rate per day	Peak season Rupees per day	
4.		Lean season Rupees per day	

SECTION D: FACILITIES IN THE VILLAGE AS ON CURRENT DATE

D1: FACILITIES AND IMPROVEMENTS

Sl. No.	FACILITY	FACILITY AVAILABLE	IF NO, distance to Nearest facility?	IF YES, SPECIFY NUMBER		Satisfaction with Facility Use code: 1=Very Satisfied, 2=Somewhat Satisfied, 3=Not at all, 4=Cannot say /do not know	If not very satisfied with facility please mention reason
			Distance (in kms)	Government	Private		
1.	Primary School	☐ Yes ☐ No					
2.	High School	☐ Yes ☐ No					
3.	Adult Education	☐ Yes ☐ No			[redacted]		
4	College	☐ Yes ☐ No					
5	Anganwadi	☐ Yes ☐ No			[redacted]		
6	Primary Health Center/ Sub Center Or Private Clinic	☐ Yes ☐ No					
7.	RMP/ MBBS Doctor	☐ Yes ☐ No		[redacted]			

Sl. No.	FACILITY	FACILITY AVAILABLE	IF NO, distance to Nearest facility?	IF YES, SPECIFY NUMBER		Satisfaction with Facility Use code: 1=Very Satisfied, 2=Somewhat Satisfied, 3=Not at all, 4=Cannot say /do not know	If not very satisfied with facility please mention reason
			Distance (in kms)	Government	Private		
8.	Traditional Doctor	☐ Yes ☐ No					
9.	Veterinary Hospital	☐ Yes ☐ No					
10.	Internal Roads	☐ Yes ☐ No					
12.	Approach Road	☐ Yes ☐ No					
13.	Bus Facility (In Case of Distance, Write Distance to	☐ Yes ☐ No					
14.	Post Office/ Courier	☐ Yes ☐ No					
15.	Public Telephone	☐ Yes ☐ No					
16.	Community T V Set	☐ Yes ☐ No					
17.	Fair Price Shop	☐ Yes ☐ No					

Sl. No.	FACILITY	FACILITY AVAILABLE	IF NO, distance to Nearest facility?	IF YES, SPECIFY NUMBER		Satisfaction with Facility Use code: 1=Very Satisfied, 2=Somewhat Satisfied, 3=Not at all, 4=Cannot say /do not know	If not very satisfied with facility please mention reason
			Distance (in kms)	Government	Private		
18.	Fertiliser Shop	☐ Yes ☐ No					
19.	Weekly Market	☐ Yes ☐ No					
20.	Regulated Market Yard	☐ Yes ☐ No					

D2. Number of Households with Electricity Connections _____

D3. Number of Households with electrified pump sets _____

SECTION E: ACCESSIBILITY AND QUALITY OF WATER SUPPLY AND SANITATION

E1. ACCESSIBILITY OF WATER SUPPLY AND SANITATION SERVICES IN YOUR VILLAGE

S. NO	SERVICES	TOTAL NUMBER		MANAGEMENT OF INSTITUTIONS 1. GP, 2.ZP, 3. TP, 4. NGO, 5. Villagers, 6. Private/ HH, 7. Others (specify)	TAX PER HH (in Rs)
		Public	Private		
1	Bore Well				
2	Hand pumps				
3	MWSS				
4	PWSS				
5	Others (Specify)				
6	Community Latrine				
7	No of Individual Latrine				
8	Constructed from GP Scheme				
9	Others (Specify)				

E2 PROBLEMS FROM POOR QUALITY OF WATER SUPPLY AND SANITATION

1. Satisfaction with Adequacy of Supply in the Protected Public Source:_____

Use code: 1=Very Satisfied, 2=Somewhat Satisfied, 3=Not at all, 4= Cannot say /do not know

If not very satisfied mention reason:

_____

2. Satisfaction with the Quality of Water Supply:_____

Use code: 1=Very Satisfied, 2=Somewhat Satisfied, 3=Not at all, 4= Cannot say /do not know

If not very satisfied mention reason:

_____

3. Satisfaction with Drainage System and Sanitation Facility:_____

Use code: 1=Very Satisfied, 2=Somewhat Satisfied, 3=Not at all, 4= Cannot say /do not know

If not very satisfied mention reason:

_____

4. Satisfaction with School and Anganwadi latrine facilities:

_____

Use code: 1=Very Satisfied, 2=Somewhat Satisfied, 3=Not at all, 4= Cannot say /do not know

If not very satisfied mention reason:

_____

5. Has your village faced any problem or water born disease because of poor quality of water and sanitation in last year ***1. Yes, 2. No***

If yes mention disease name: _____

No of attacked people_____, No of death people

_____

6. No People Used Hospital (other wise use Percentage): 1.Government_____2. Private_____

7. Does this village has Village Water Supply Committee ☐ Yes ☐ No

If yes write Number of VWSC : _____ Number of Members_____

8. Main Functions of VWSC are 1._____

2._____

3._____

9. Tariff for Maintenance of Water Supply and Sanitation (per household):
_____

10. Satisfaction with Maintenance of Water Supply and Sanitation from VWSC:
_____

Use code: 1=Very Satisfied, 2=Somewhat Satisfied, 3=Not at all, 4= cannot say /do not know

If not very satisfied mention reason:
_____

11. Does this village has NGO ☐ Yes ☐ No

12. Do any of these NGOs create awareness about Water Supply and Sanitation Facility under NGO: ☐ Yes ☐ No

If yes (write brief note about type of Awareness)

13. Are your village facing any water related problems (Please mention details):_____

14. Are your village facing any sanitation related problems (Please mention details):_____

SECTION G: ACCESSIBILITY OF WATER SUPPLY AND SANITATION SERVICES FOR MAJOR SOCIAL GROUPS

S.No	FACILITY	SC	ST	OBC	Minority	Other
1. DRINKING WATER *Code 1: 1=Piped water, 2= Bore well/ Tube well, 3= Open well, 4= Surface water, 5=hand pumps, 6= MWSS ,7=Other 8=No Source* *Code 2: 1=Quality hard water, 2= Muddy water, 3= Good quality*						
1	Source ***(use Code 1 to list three most common sources)***					
2	Quality ***(use Code 2 to note predominant quality of water supply)***					
3	Adequacy of water Supply ***Write Code:*** ***1=Adequate,*** ***2= Not Adequate***					
DRAINAGE AND SANITATION						
4	Community latrines ***Write code: 1=Yes, 2=No***					
5	Management of Community latrines 1. GP, 2. NGO, 3. Villagers, 4 Private, 5. Others (specify)_____					
6	Individual Latrines ***Write code: 1=Yes, 2=No***					
7	Drainage ***use code to list predominant type:*** *1=Open drainage, 2= Underground drainage, 3= No drainage*					
8.	Management of Drainage 1. GP, 2. NGO, 3. Villagers, 4. Private, 5.Individual HH, 6. Others (specify)_____					

SECTION H: NUMBER OF COMMUNITY GROUPS

Sl. No	Community Groups	*Record number of groups of each type for each social group*				
		SC	ST	BC	Other castes	Whole Village
NGO / GOVERNMENT PROMOTED						
1.	Self Help Groups (SHGs)					
2.	Village Water Supply Community (VWSC)					
3.	Youth Association					
4.	Others (specify)					
COMMUNITY PROMOTED						
5	Caste Association					
7.	Religious groups					
8.	Others (specify)					

Responsible Names: **Position**

1.

2.

3.

Questionnaire ID

Centre for Multi-Disciplinary Development Research (CMDR) Dharwad , Karnataka

Study on *"Role of Gram Panchayats in Rural Water Supply and Sanitation: A Case Study of Dharwad, Karnataka"*

☐☐☐☐

HOUSEHOLD SURVEY

Household Identifiers

DISTRICT NAME: _____ CODE:_____
TALUK NAME: _____ CODE:_____
GP NAME: _____ CODE:_____
VILLAGE NAME: _____ CODE:_____

IS THE HOUSEHOLD LOCATED IN

(Circle relevant code)

SC /ST Hamlet	1
SC /ST colony in main village	2
Colony in main village	3
Hamlet away from main village	4

RESPONSE CODE:

(Circle relevant code)

Interviewed	1
Interviewed after revisits	2
partially completed	3
Refused	4
Household not available	5

HOUSEHOLD SURVEY CODE

(Circle relevant code)

Original Household	1
Substitute Household	2

REASON FOR SUBSTITUTION:

(Circle relevant code)

Informant Busy	1
Members away from home	2
Members away from home	3
Informant non-cooperative	4
Others	5

Investigator Name: _____ Date Completed: ____/_____/_____

Researcher Name: Narayana Billava Date Checked: ____/_____/_____

SECTION A: HOUSEHOLD INFORMATION: Household Caste, Religion and Roster

A1. Household Roster (Composition)

ID CODE	NAME	AGE (IN COMPLETED YEARS) If less than 1, write "00"	SEX post code: Male= 1, Female= 2	RELATIONSHIP TO HH	Marital Status 1. Married, 2. Never Married, 3. Widow	LITERACY	INCOME	OCCUPATION Record answer and then write code using occupation code below. ANSWER CODE	
RESPONDENT									
02									
03									
04									
05									
06									
07									
08									
09									
10									

A2. Household Identification

1. Religion[I]:_____, Caste:[II]_____.
2. Occupation A. Main:_____, B. Subsidiary:_____
3. Annual Expenditure (in Rs of Household) :_____. Monthly:_____, Weekly:_____

4. Type of House: 1. Kaccha 2. Semi-Kaccha 3. Pakka 4. RCC

5. Do you have Ration Card: 1. Yes 2. No , Types of Ration Card:1. BPL, 2. APL, 3. Others (Specify)_____

6. Assets Ownership: 1. TV, 2. Bicycle, 3. Scoter/ Motor Bike, 4. Radio, 5. Fan, 6. Fridge, 7.Bullock cart, 8.Tractar 9. Others (Specify)_____

7. Livestock Owned (Nos): 1. Cows,_____2. Buffalo_____, 3. Goats/Sheep_____, 4. Poultry____ , 5. Others (Specify)_____

8. A Land Details:

LAND HOLDING	IRRIGATED (IN ACRES)	UNIRRIGATED (IN ACRES)	TOTAL
LAND OWNED			
LAND CULTIVATED (allowing for fallow land etc) (in the current year)			
LAND LEASED IN (in the current year)			

[I] Religion Code: 1. Hindu, 2. Muslim, 3. Christians, 4. Others (Specify)_____

[II] Caste: 1. Brahmin, Jain & Vysys, 2. Lingayat, 3. Vokkaliga, 4. OBC, 5. SC, 6.ST , 8. Others

LAND LEASED OUT (in the current year)			

B. what is the main mode of irrigation on your land? (Use Code)

1._____

SECTION B: POLITICAL PARTICIPATION

B1. Voting Behaviour

1 Did you vote in the following elections? *(check boxes for every election that the respondent voted in . Multiple responses possible.)*

☐ Gram Panchayat

☐ Taluk Panchayat

☐ Zilla Panchayat

☐ State Assembly

☐ Lok Sabha

B2. Political Participation

1. Is any member of the household currently a member of the Gram Panchayat? ☐ Yes ☐ No

2. If yes, which member (write down ID CODE and NAME from Question A1) ID CODE: _____

3. Has any relative of yours been a member of the GP? ☐ Yes ☐ No

4 Has any household member a Panchayat member in the past? ☐ Yes ☐ No

If yes specify: ID CODE: _____

B3. Participation in Local Organizations

Which of the following groups do you or your household members participate?

Sl.No	Name Of The Group	Do You Know the Existence of the Group in Your Village? Use Code: 1.Yes , 2. No		If Yes, Any Household Member Ever Participated in the Meeting of the Group? *Use Code To Circle Response:1. Male 2. Female 3. Male& Female, 4. No Body*			
1	Village Development Committee	1	2	1	2	3	4
2	Self-Help Group	1	2	1	2	3	4
3	Cooperative Milk Society or Other Society	1	2	1	2	3	4
4	Women's' Group	1	2	1	2	3	4
5	Tank Management Committee	1	2	1	2	3	4
6	Water Users Association	1	2	1	2	3	4
7	Youth Club/Association	1	2	1	2	3	4
8	Caste Association	1	2	1	2	3	4
9	Other (Specify)	1	2	1	2	3	4

SECTION C.ENTITLEMENTS TO CARDS AND BENEFIT SCHEMES from GP

C1. Has your household benefited from any of the following schemes?
(Use code, 1= Not Eligible, 2= Received Benefit, 3= Applied for benefit but benefit not received, 4=Not Aware of Scheme 5. Not Applied)

1 House under Group Housing Scheme: _____

2 Employments in Food For Work Program:_____

3. Toilet Facilities: _____

4. Drainage in front of your House (Laying New Drains or Maintenance of Existing Drains):_____

5. Piped Water for Domestic Use:_____

6. Hand pump near to Your House:_____

7. Mini Water Supply:_____

8. Any Other (Specify): _____
(Kutira jyothi, Widow Scheme, Tiller/ Tractor Subsidy etc….)

SECTION D: D1.TAXES, CONTRIBUTIONS AND PARTICIPATION IN PUBLIC SCHEMES

Type of Payment		How Much Have You Paid / Contributed to the Following Activities? (Amount in Rupees)[III]	Whom Did You Pay The Money To?[IV]
1	House Tax (P. A)		
2	Water Charges (P. A)		
3	Other Tax Paid to GP (P. A)		
4	Contributions to other Public Functions (Last one year)		
5	OTHER (Including Non-Official Payments, Like Paying Brokers to get Work Done) Specify:		

D2. Annul Expenditure on Drinking Water (during last one year):_____

[III] Use codes and write response: No payments made= 1, Payment made but don't know how much = 2, Don't know / Can't say= 9

[IV] Use codes and circle response: Gram Panchayat official= 1, Private organisation/individual/ village leader/community leader=2, Public organisation (e.g. to school/library)= 3, Other= 4 _____, Don't know / Can't say= 5

SECTION E: 1. DETAILS OF DRINKING WATER SUPPLY

1. **Sources Used for drinking water:** 1. Modern Sources 2. Traditional Sources

Use codes: 1. Modern Sources: 1. Bore Well/ Hand Pump, 2. MWS, 3. PWS 4. Other

2. Traditional Sources: 1.Well, 2. Tank or pond 3. River, Canal, and Lake 4. Others

2. **Sources Used for Cooking:** 1. Modern Sources 2. Traditional Sources

Use codes: 1. Modern Sources: 1. Bore Well/ Hand Pump, 2. MWS, 3. PWS 4. Other
2. Traditional Sources: 1.Well, 2. Tank or pond 3. River, Canal, and Lake 4. Others

3. **Sources Used for Washing and Bathing:** 1. Modern Sources 2. Traditional Sources

Use codes: 1. Modern Sources: 1. Bore Well/ Hand Pump, 2. MWS, 3. PWS 4. Other

2. Traditional Sources: 1.Well, 2. Tank or pond 3. River, Canal, and Lake 4. Others

4. **Distance of Dwelling from Drinking Water Source (Km) : _____**

Use code:1. Within dwelling, 2. Out side dwelling but within premises, 3.Out side premises at distance < 0.25 Km, 4. .Out side premises at distance 0.25 Km to 0.50 Km, 5. Out side premises at distance 0.50 Km to 1 Km, 6. Out side premises at distance 1 Km to 1.50 Km 7. Out side premises at distance > 1.50 Km

5. **Distance of Dwelling from Drinking Water Source (in Summer Season) (Km) : _____**

Use code:1. Within dwelling, 2. Out side dwelling but within premises, 3.Out side premises at distance < 0.25 Km, 4. .Out side premises at distance 0.25 Km to 0.50 Km, 5. Out side premises at distance 0.50 Km to 1 Km, 6. Out side premises at distance 1 Km to 1.50 Km 7. Out side premises at distance > 1.50 Km

6. **Walking time (minutes): 1.** Normal day _____ **2.** In Summer Season_____

Use code: 1. Less than 5 min, 2. 5 to 15 min, 3. 15 to 30 min 4. 30 to 1Hr, 5.More than 1 Hr

7. **Waiting time (minutes):**_____

Use code: 1. Less than 5 min, 2. 5 to 15 min, 3. 15 to 30 min 4. 30 to 1Hr, 5.More than 1 Hr

8. **Right to use of Source:** _____

Use Code: 1. Used by house hold alone, 2. Shared by restricted set of HHs . 3. Community use, 4. Other_____

9. **Sufficiency of drinking water available from public source:** _____ 1.Yes, 2. No

If no mention alternative source_____ and distance_____ time_____

10. **Locality of Sources:** _____

Use code: 1. Dominated Caste, 2.General, 3. SC, 4. ST, 5. out side of Village

11. **Normally who used to bring water daily** _____

Use code 1. Male Adults, 2. Female Adults, 3. Male Children, 4. Female Children, 5. Servants, 6. Others

12. **Frequency of Bathing a) Adults:**_____

b) Children:_____

Use code: 1. Every Day, 2. once in two days, 3. Once in a four days, 4. More than four days 5. Weekly once

13. **Frequency of washing clothes:** _____

Use code: 1. Every Day, 2. Once in two days, 3. Once in a four days, 4. More than four days 5. Weekly once

14. a. Maintenance of the protected public source from :_____

1. GP, 2. VWSC, 3. Others_____

b. Maintenance: _____

Use code: 1. regularly cleaned 2. Repaired/cleaned immediately when complain is made, 3. The 'waterman' is indifferent (only repairs/cleans when a locally important person complains)

15. Satisfaction with adequacy of water supply in the protected public source_____

Use code: 1=Very Satisfied, 2=Somewhat Satisfied, 3=Not at all, 4= Cannot say /do not know

If HHs are not very satisfied with adequacy of water supply please mention reason: _____

16. Satisfaction with the quality of water supply:_____

Use code: 1=Very Satisfied, 2=Somewhat Satisfied, 3=Not at all, 4= Cannot say /do not know

17. If HHs are not very satisfied with Quality of drinking water obtained from sources:_____

1. Known to be polluted, 2. Clean but contains excess of iron or other mineral, 3. Bad taste due to unknown causes, 4. cloudily or not clear due to unknown causes, 5. Other defects (Specify)_____

18. Treatment of Drinking Water by HHs:_____

Use code: 1. Filtering (plan clothes) of water by HHs, 2. Boiling of water, 3. Chemical treatment of water (Chlorine or any other anti bacterial treatment), 4. Others (Specify)_____ 5. Not Treatment

19. Material of main container for storage of drinking water:_____

Use code: 1. Pots, or Earthen, 2. Plastic, 3. Other Non Metal, 4. Iron, 5. Copper, 6. Stainless Steel, 7. Other Metal

20. Has any HHs member suffered from illness, due to poor quality of water (In last one year): 1. Yes, 2. No
(Water related diseases like Cholera, jaundice, typhoid, diarrhoea, dysentery, and gastroenteritis etc…..)

If yes, please mention details

Sl No	Person Name (use ID Code)	Disease Name	How often HHs Member has Visited Hospital	Hospital Type (Use code)	Expenditure on treatment	Distance to facility	Walking time	By Bus	Travel cost	Loss of Wages
1										
2										
3										

Hospital type: 1. Government, 2.Private, 3. Semi Government 4. Others (specify)_____

21. Are you willing to pay for adequacies quality drinking water supply by government/ GP? 1. Yes, 2. No

If yes How much (in Rs)_____
If No Why (please mention reason):_____

SECTION E: 2. DETAILS OF SANITATION PROGRAMME:

1. Type of Latrine facility:
Use Code: 1.Septic tank, 2. Pour flush pit, 3. Sewerage system, 4. others (_____) 5. Open Access/defecation

2. a. If HHs (Adults) use open access, (in Q, 1) Distance _____, Walking Time:_____

b. If Children (below 6 years) use open access Distance _____, Walking Time:_____

3. If HHs has latrine facility (Q.1,) whether it is constructed under GP scheme: 1. Yes 2. No
If yes mention scheme name:_____

3.1. How much you have invested for latrine construction: Total Rs_____

3.2 How much subsidy you got:_____

3.3 Reason for opting individual latrine:_____
1. Because of GP Scheme, 2. Because of motivation (if motivated, who 1. NGO, 2. Village elder, 3. Community or village organization, 4. Others_____) , 3. Own decision

4. Reason for not opting individual latrine:

1. Because of economic problem, 2. Scarcity of place, 3. Scarcity of water 4.Others_____

5. Are you getting sufficient water to keep your toilet clean: 1. Yes, 2. No

6. Do you have Drainage system in front of your house: 1. Yes, 2. No

7. If yes, maintenance of drainage facility:

1. Regularly by GP,
2. Weekly
3. When complaint is made to the GP
4. Others (Specify)_____

8. Drainage arrangement for waste water: _____

1. Open katcha,
2. Open pucca,
3. Covered pucca,
4. Under ground,
5. No drainage

9. Involvement of the community (e.g. your household) in maintenance: 1. Yes (involved) 2. No, (HHs is not involved)

If yes 1. Daily,
2. Weekly,
3 Monthly,
4. Depends on the stagnation of Water

10. Where do you dispose waste/garbage?

Use code: 1. Street bin, 2.Public open space, 3.Own compost

11. If you are using street bins (Q.10):

Do you use it how often 1. Daily, 2. Thrice in a week, 3. Weekly, 4. Monthly

12. a. Maintenance of the Street bins from: _____

1. GP, 2. VWSC/ NGO, 3. Others_____

b. Maintenance: _____

Use code: 1. Regularly cleaned, 2. Weekly, 3. When complain is made

13. Has any HHs member suffered from illness due to poor maintenance of sanitation 1. Yes, 2. No
(Sanitation related diseases like Dengue, Malaria, Chickangunya, etc..._)
If yes, please mention details

Sl No	Person Name (use ID Code)	Disease Name	How often HHs Member has Visited Hospital	Hospital Type (Use code)	Expenditure on treatment	Distance to facility	Walking time	By Bus	Travel cost	Loss of Wages
1										
2										
3										
4										

Hospital type: 1. Government, 2.Private, 3. Semi Government 4. Others (specify)_____

14. How much satisfied are you with the provision of the sanitation services in your village?
Use code: 1=Very Satisfied, 2=Somewhat Satisfied, 3=Not at all, 4= Cannot say /do not know

If HHs are not very satisfied with sanitation services please mention reason:_____

15. Are you willing to pay for individual latrine facilities provided at the subsidized rates by government/GP? 1. Yes, 2. No

If yes How much (in Rs)_____

If No Why (please mention reason):_____

16. Are you willing to pay for the maintenance of community latrines? 1. Yes, 2. No

If yes How much (in Rs)_____

If No Why (please mention reason):_____

SECTION F: PARTICIPATION IN GRAM SABHA MEETINGS

A. Attendance at Gram Sabha Meetings: Respondent

1. Have you ever attended any Gram Sabha meetings? ☐ Yes ☐ No

1.1. If yes, how did you/your household member know about the last gram sabha conducted? (Specify)

1.2. During the last year, how many Gram Sabah did you attend? (Record number)

1.3: Which issues were discussed in the last Gram Sabha you attended? (Record in table)

A. Water Supply	B. Sanitation (including drainage, street bin, etc...)	C. Other Issues

1.4: The action so far taken on the mentioned important issues (record verbatim by each issue)

A. Water Supply	B. Sanitation (including drainage, street bin, etc...)	C. Other Issues

2. If No Attended at Gram Sabha Meetings: Family Members

2.1. If you did not attend has any of your household member/s attended a Gram Sabha Meeting? ☐ Yes ☐ No

2.2 If yes, which members (Write down ID Code and Name from question A1)

a.) ID Code: _____ Name: _____

b.) ID Code: _____ Name: _____

c.) ID Code: _____ Name: _____

3. Please mention the which water supply and sanitation beneficiaries are identified?_____

Use Code: Identified by members without discussion, 2. identified by GP Secretary without discussion 3. Names identified after discussion in Gram Sabha meeting 4. Any other method (Specify)

1. Are you happy with the beneficiaries identified for Gram Sabha?

   Use code: 1=Very Satisfied, 2=Somewhat Satisfied, 3=Not at all, 4= Cannot say /do not know

   If HHs are not very satisfied about for Gram Sabha please mention reason:_____

2. Attendance of officials and members in Gram Sabha meetings (Specify)_____

Code Sheet

Section A: 1. RELATIONSHIP TO HEAD 1=Head 2=Spouse of head 3= Parent 4=Married son OR Daughter 5=Unmarried son OR Daughter 6=Daughter in law OR Son in law 7=Grand child 8=Grand mother/ father 9= Brother/ Sister 10=Other Relatives 11=other non-relatives	**2. LITERACY** 1= Illiterate 2= Literate, no school 3= Primary School 4= High School 5= Pre-degree or Diploma or Vocational training 6= Degree or above 7= Not Applicable, as in the case of children
3. OCCUPATION 1=Agriculture, 2= Agri. casual labor, 3=Own business, 4= Non-agri. casual labor, 5=Salaried work, 6=Household work , 7=Livestock management, 8=Pensioners /rentiers, 9=Non working adults 10= Student 11=Not Applicable (for example, in the case of children.) 12=Other	**B: Main mode of Irrigation** 1. Tube well / Bore well 2. Canal 3. Pond / tank 4. Other natural source 5. Mixed 6. Rainfall 7. Don't know / can't say
PARTICIPATION IN LOCAL ORGANIZATIONS 1=Yes, male only 2=Yes, female only 3=Yes, both male and female 4=No One	